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### Action of Waves.

The dynamic force hundred by sea waves is greatest at the crest of the wave before it breaks, and its power in raising itself is measured by various facts. Thus, at Wasberg, in Norway, in 1820, it rose four hundred feet; and on the coast of Cornwall, in 1843, three hundred feet. There are likewise cases showing that waves have sometimes raised a column of water equivalent to a pressure of from three to five tons to the square foot. It has also been proved that the velocity of the waves depends on their length; that waves of from three hundred to five hundred feet in length, from crest to crest, travel with a velocity of from twenty to twenty seven and one-half miles an hour—and this, whether they are five or fifty-four feet in total hight.

Waves travel very great distances, and are often raised by far off-huricanes, having been felt simultaneously at St. Helena and Ascension, though six hundred miles apart, and it is thought that ground-swells often originate at the Cape of Good Hope, which extend three thousand miles distant. Nor do waves exert their force at or near the surface only; one instance being mentioned where a diving-bell, at the depth of eighteen fathoms, was moved five feet laterally, in calm weather.

The motion of "shingle," as it is termed, depends on the direction in which the surf strikes the shore, which is influence by the direction of the wind; and this is shown by observations on the French coast, to be in the ratio of two hundred and twenty-nine days from western quarters, to one hundred and thirty-two days from eastern quarters.

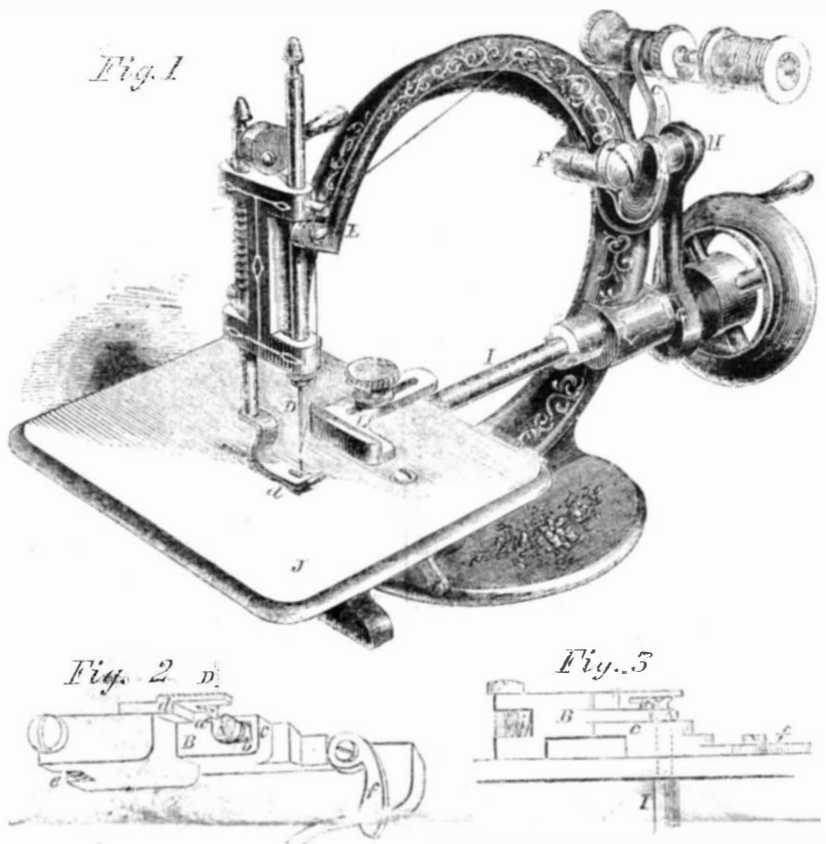
### Artificial Pearls.

A very remarkable result of pisciculture has been lately obtained in the department of the Meurthe, when, from a small stream, the enormous weight of 25,000 kilograms of bleak was taken during the last season. The scales of this fish are used for makiug artificial pearls. By an ingenious process they are reduced to a kind of lustrous paste called Essence d'Orient, and the French artificial pearls are simply small hollow glass balls coated inside with this paste and filled with white wax. —*Galignani's Messenger.*

### Copying Ink.

M. Henry, of London, has taken out a patent for the use of glycerine in common ink to render it fit for taking copies of letters that may be written with it. Glycerine is a hygrometric liquid, and is suitable for this purpose. It will also tend to keep any substance with which it may be incorporated in a moist or damp state, and is thus very useful for many other purposes.

## WILLCOX & GIBBS' SEWING MACHINE.




It is astonishing how, in a few years, the sewing machine has made such strides in popular favor, and become, from being a mechanical wonder, a household necessity, and extensive object of manufacture. While the higher priced varieties have such a large sale, it is no wonder that the cheaper ones sell in such tremendous quantities, and that our inventors are always trying to produce something new and cheap.

The subject of our engravings is the sewing machine known as Willcox & Gibbs' single thread machine, Fig. 1 being a perspective view, and Figs. 2 and 3 diagrams of the feed motion and looper, seen in different positions across the tablet. The inventor is J. E. A. Gibbs, of Mill Point, Va., and he obtained a patent June 2, 1857, which was re-issued July 13, 1858 and another patent August 10, 1858. It is a highly useful machine, and works with wonderful ease.

The principal novelties of the machine are the revolving hook or looper, A, the admirable feed, B, and the peculiar intermittent tension, C. It will be seen by reference to the engraving that a straight needle, D, is used, and that the motion is given to the needle bar by a curved arm, E, pivoted to the frame of the machine at F, and receiving its motion from an eccentric, G, on the pulley shaft, through a connecting rod working on ball joints, H, to give it a universal motion. The pulley shaft, I, it will be observed, passes horizontally under the tablet, J, and has on its end a hook, A, of a very peculiar form, which makes a revolution to each vibration of the needle bar. The action of this hook is as follows:—The needle passing through the goods carrying with it the thread, is met by the point of the hook, *a*, during its upward motion. The point now passes between the thread and needle, retaining the loop, while the needle ascends for a second stitch; on its descent its passes through the loop on the hook, which loop is delivered upon the needle before a second loop is taken by the hook, each loop of the stitch being twisted half of a revolution after it has been drawn through its predecessor, by which means a firmer and more secure stitch is obtained than has hitherto been accomplished by such machines as this. The simplicity and accuracy of this mechanism prevents its dropping stitches, to which many other machines are so liable, and which has hitherto brought the "chain stitch" into disrepute.

The feed is got from an eccentric, *b*, on the pulley shaft directly behind the looper: the feed bar, *c*, carrying the feed surface, *d*, (which, of course, must project through the tablet, J,) is pressed against this eccentric by a spring, *e*, the eccentric, *b*, in fact, revolving in a slot in the feed bar. If the motion of this feed bar be not checked in any way, it will follow the motion of the eccentric, and the feed surface will describe a circle, a portion of the arc of the circle occurring above the tablet on contact with the goods, while the remainder of the circle is completed below the tablet, and away from the goods. The length of the stitch or amount of feed is regulated by a small cam-shaped lever, *b*, against which the feed bar strikes, and the position of this lever can be varied so as to diminish the throw of the feed bar, cutting off a portion of its arc of motion, thus determining its horizontal motion, its vertical throw remaining the same.

The spool-holder, K, consists of a conical sleeve revolving on two cones, the pressure of the cones upon the sleeve being regulated by a thumb-screw and spring; this gives an adjustable tension, while an intermittent tension is given by a lever, C, pressing against one of the cones, and operated by the needle arm, E, in such a manner that during the formation of the loop the thread is left comparatively slack, while the tension is very much increased when the loop is being drawn into the goods.

One cannot but admire the beauty and accuracy of its movements, and the entire absence of all noise, even when it is running at the rate of two thousand stitches and upwards per minute; this alone must prove a great recommendation to it. Another merit is the good workmanship, and the parts are made interchangeable, so that in the event of an accident to the machine, any part can be replaced at a trifling cost. It is sold upon an elegant stand that forms an ornament to a parlor. At the late fair of the Franklin Institute, Philadelphia, it received the highest commendation from a committee of judges, and their report was eminently favorable.

James Willcox, No. 715 Chestnut street, Philadelphia, is the manufacturer and general agent, from whom further information may be obtained.

### M. Aime Bonpland.

This distinguished botanist died recently at San Borja, Brazil, at the age of eighty-five. In early years he was the companion of Humboldt in his travels on this continent, and collected and classified upwards of six thousand plants then unknown. He was the friend of Napoleon I. and the Empress Josephine, and is the person who advised the Emperor after his abdication at Fontainebleau to retire to Mexico and wait for a future opportunity of becoming again the lion of Europe. After the death of Josephine he returned to South America, and became a professor of natural history in Buenos Ayres. After many travels in the tropics, and imprisonment as a spy in Paraguay, from which he was released in 1829, he retired to San Borja, where, surrounded by rare botanical specimens and beauteous orange groves, he lived in tranquility and died in peace. He published many botanical works in the French language.

### Statistics of Lowell Manufactures.

From a small table recently published on the above subject, in Lowell, we learn that there are 399,064 spindles and 12,234 looms at work in that city. There are 2,394,000 yards of cotton cloth made weekly, 44,000 yards of woolen cloth, and 25,000 yards of carpets. The Merrimack Manufacturing Co. makes 340,000 yards of calico per week, and and the Hamilton Co. 148,000 yards. No less than 72 turbine wheels are required to drive the machinery of all the mills, besides several breast wheels; 61,617 gallons of sperm oil and 26,000 pounds of lard are consumed annually.

### Strength of Camels.

The Galveston *News* states that one of the camels in that city kneeled down and received a load of five bales of hay weighing 1,400 pounds, which it raised without the least effort, and walked away with apparent ease. In their native country the average load for a full grown camel is some 800 pounds, with which they perform long journeys over deserts with but little food or water.

HOGS IN OHIO.—We learn from an exchange that the number of hogs in Ohio, six months old and over, on the 1st of April, 1858 (a fit day to take a pig census), were 2,554,914. In 1857, there were 2,331,778, thus showing an increase of 223,136 in the year. This prosperity should make that State *bristle* up.

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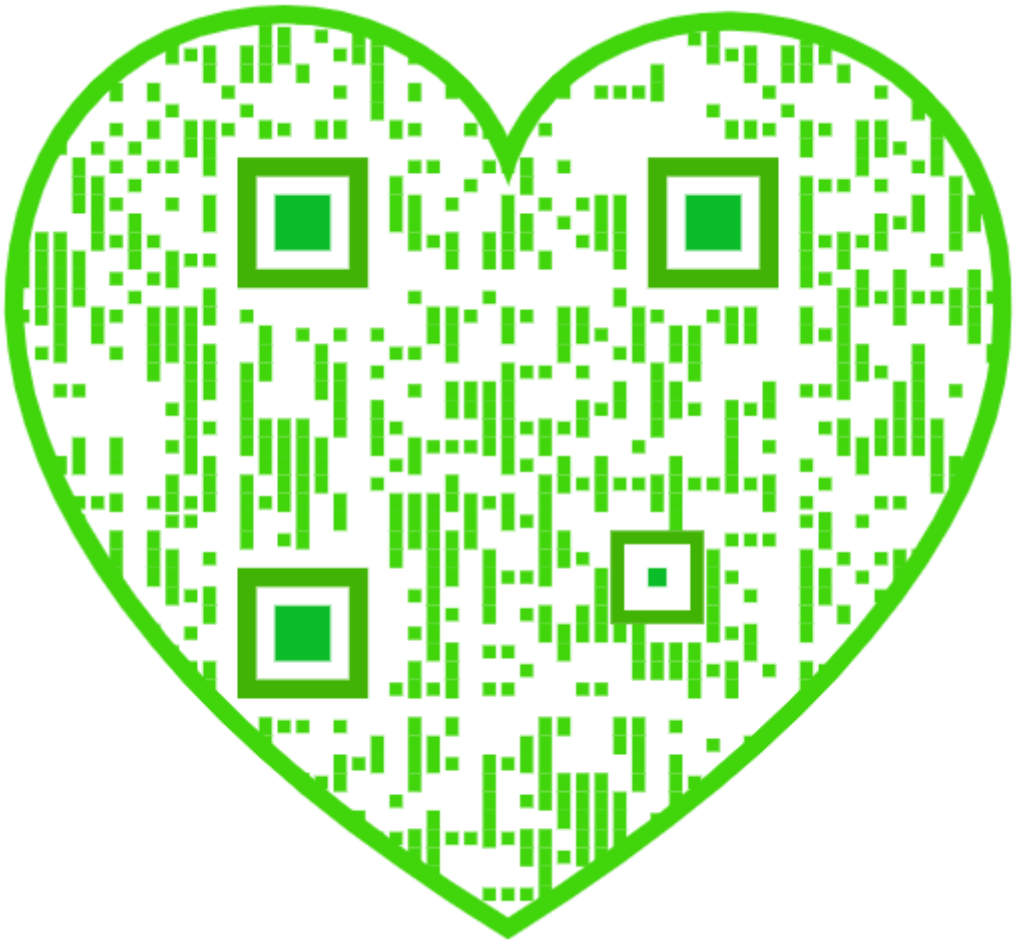

**Issued from the United States Patent Office**
FOR THE WEEK ENDING JANUARY 18, 1859.

*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

POTATO-DIGGERS—R. L. Allen, of New York City: I am aware that the dirt-sifting wings of potato-digging plows are common, and therefore do not claim them.

But I claim the arrangement and combination of the removable wings, b c, with the double mold-board, substantially as set forth.

I also claim the arrangement and combination of the central or dividing bar, a, with the standard, C, by means of the notched fastening, e and d' substantially as set forth.

RING LOCK—Wm. J. Alston, of Williamson county, Tenn.: I claim the friction springs arranged substantially as described, in combination with the inner rings of the locks, for the purpose set forth.

APPARATUS FOR DRYING GRAIN, MALT, &c.—Stephen R. Andres, of Troy, N. Y., and Samuel Andres and McDonough Bucklin, of New York City: We do not confine ourselves to the precise form of our machine described in this specification, as the same may be changed without changing the character of our invention.

We claim the use or employment of a blast or current of hot air introduced into the cylinder through a hollow journal, or its equivalent, when said current of hot air is brought into direct contact with the substance to be dried thereby, in combination with a cylinder made adjustable to any angle, as described.

SYRINGING APPARATUS—Ernst Bagniki, of New York City: I claim the construction of a chair substantially as described, and containing a pump, with an arrangement of the valve chambers, in the manner and for the purpose as specified.

AMALGAMATOR—John Barker and Edward W. Barker, of Baltimore, Md.: We do not confine ourselves to the precise arrangement or form or construction of the parts as described, as other forms and arrangements may be used in carrying out the principles of our improvements.

We claim, first, The combination of a set of crushing or attrition rollers with an upper and lower rubber, arranged substantially as described for the purpose set forth.

Second, We also claim introducing an independent current of water into the amalgamator, substantially as described, so as to flow around the lower end of the feed pipe, and meet and mingle with the inflowing current of material, for the purpose as set forth.

Third, In combination with the rollers we claim constructing the lower rubber hollow, with openings, to admit the quicksilver into the interior for the purpose set forth.

Fourth, Constructing the lower rubber with a vertical passage through its center, arranged substantially as described, for the purpose set forth.

Fifth, The combination of the concave plate, arranged substantially as described, with the rollers, for the purpose of directing the inflowing current to the center, and between the rollers.

Sixth, Constructing recesses on the interior of the casing over the journals arranged substantially as described, for the purpose set forth.

SEED PLANTERS—James F. Beckwith and Adin G. Gage, of South Alabama, N. Y.: We claim the arrangement of the tooth, O, discharge spout, Z, coverers, I, hoppers, B R, frame-piece, A A, lever, F, and bar, D, substantially in the manner and for the purpose fully set forth.

SELF-PRIMER FOR FIREARMS—William H. Bell, of Washington, D. C.: I claim, first, The combination of the shield, f, plunger, i, spring, k, and screw head, h, in the manner described, with the magazine chamber, b, for the purposes set forth.

Second, The arrangement and combination of the pin, n, on the piston, i, and slot, m, in the shield, f, with the slot, o, in the side of the hammer, for the purpose specified.

Third, The removable guard plate, q, as arranged and operated for the purposes set forth.

SOFA FRAME—Peter Born, of New York City: I claim as a new and improved article of manufacture, a complete frame of a sofa made of thin layers of wood in the manner substantially as specified.

[The frame of this sofa is made with veneers on a mold, and the same mold will do for many sofas; it is very strong and elegant, and forms a useful and ornamental article of furniture.]

COMPOSITION FOR ORNAMENTING GLASS—Jules Joseph Henri Brianchon, of Paris, France: I claim the yellow coloring composed of resin, nitrate of uranium, essence of lavender, and the flux of bismuth; also the orange red coloring, composed of resin, nitrate of iron, essence of lavender, and the flux of bismuth; also the imitation gold coloring, composed of the above described orange red coloring and the yellow coloring mixed together, with additional parts of the preparation of uranium and iron; also the variegated prismatic coloring, composed of ammoniuret or cyanuret of gold, or gold dye, turpentine, essence of lavender, the bismuth flux and uranium; also the mother-of-pearl coloring, composed of the bismuth flux, the flux of lead, chloride of antimony, resin, lavender, or other essence, and colophony; all of the above colorings being made and applied in the manner and in proportion, substantially as set forth.

[A notice of this improvement will be found in another column.

LUBRICATING COMPOUNDS—Reuben R. Brown, of Buffalo, N. Y.: I claim a lubricator made of the ingredients and in the proportions substantially as set forth.

SEEDING MACHINES—W. G Bulgin, of West Jersey, Ill.: I am aware that rotary coulters, I, have been previously used, and also levelers, F, or their equivalents; seed-distributing devices similar to the serrated plate, C, have also been used.

But I am not aware that the parts have been arranged relatively with each other, to operate as shown.

I claim the rotary coulter, I, leveler, F, with share, H, attached, and harrow teeth, K, arranged relatively with respect to each other and to seed box, A, provided with a suitable seed-distributing device, so as to operate substantially as and for the purpose set forth.

[This invention is more especially designed for use in the western States, where wheat is sown directly on corn stubble not previously plowed. The object is to properly prepare the soil by leveling and pulverizing the same, and in distributing the seed evenly in a uniform manner in the prepared soil.]

WIND WHEEL—Abner L, Butterfield, of West Dummerston, Vt.: I am aware that collapsible sails for wind wheels have been previously used, and I am also aware that valves have been employed and arranged similar to those shown and described; I therefore do not claim, broadly, the sails, E, nor the valves.

But I claim attaching the sails, E, to the rames, D, of the arms, C, substantially as shown, so as to permit of a self-lateral adjustment of the same, and using the catches, o, and slides, g, with cords attached, for respectively locking the sails and freeing them from the locks or catches, substantially as described.

[This wind wheel is formed of collapsible sails applied to radial arms, so as to form a very simple and efficient wheel.]

BELT CLASPS—Geo. Churchhill, of Hartford, Conn.: I claim the combination of the plates, A A', pins, B, screws, F, as and for the purpose described.

MODE OF OPERATING WINDOW BLINDS—John Clark, of Williamsburgh, N. Y.: I claim attaching toothed flanches, d, or pinions to the tenons, c', of the slats, C, and having the flanches or pinions gear into a sliding rack bar, D, placed in the stile, B, of the blind, and actuated by the pinion, f, and supplemental rack teeth, e, or their equivalents, substantially as and for the purpose set forth.

[This blind has a much neater appearance than the ordinary one; it is more durable, less liable to get out of repair, and the slats are more readily adjusted, while the cost of construction is not materially enhanced.]

CANTEEN GUN STOCK—Samuel Colt, of Hartford, Conn.: I do not wish to limit myself to any particularity of construction or kind of material.

But I claim so constructing the stock of a gun that it shall constitute a canteen, substantially as described.

BOOT-BLACKING APPARATUS—J. M. Connel, of Newark, Ohio: I make no claim to the construction of brushes of two sections, as shown in several patented knife-polishers.

But I claim as an improvement on the patented boot-blacking machine of J. M. & J. Connel, the concave-edged self-adjusting brush wheel, B, in combination with the spring foot-piece, F, constructed, arranged and operating as described.

PLOWS—G. D. Cotton, of Galesburgh, Ill.: I claim combining and arranging together the beam, D, the standards, d and e, upright, a, lever, E, brace, Z, bar, H, axle, B, and pole, C, said pole reaching forward, and resting upon the neck yoke, in the manner and for the purpose specified.

CULTIVATORS—Jesse Cunningham, of Marshall, Mo.: I do not claim the reversible bar, J, with a marker or wheel, g, attached, for such device has been previously used.

But I claim attaching the furrow shares, H, to a swinging frame formed of the shaft, E, bar, F, and arm, b, placed in a mounted frame, A, in combination with the buttons, C C, provided with step-like projections, d, for regulating or adjusting the hight or inclination of said share frame, and consequently the depth of the furrows, substantially as described.

[This invention consists in a novel way of adjusting a frame to which furrow shares are attached, in order to regulate the depth of the furrows as occasion may require, the share frame being fitted in a frame that is mounted on wheels and provided with a guide.]

RAILROAD CHAIRS—Wm. M. C. Cushman, of Albany, N. Y.: I claim the buttress, E E, at each end of the outside jaw, flanch, or rib, D, in combination with the top or bearing surface, c, as and for the purposes described and set forth.

HORSE RAKES—L. S. Deming, of Newington, Conn.: I claim the combination of the fingers, B, shaft or axle, A, cam, F, and lever, G, these several parts being constructed, arranged, operated and operating in the manner described, for the purpose specified.

SPOKE MACHINE—L J. Dickason and John Frazee, of Georgetown, Ohio: We claim, first, The described mode of operating the cutter frame, J, with its cutters, K, and also the emery wheel, h, and its frame, L, so as to throw them all clear of the spoke, S, after the operation of twining and smoothing, that is to say, we claim the employment of the two arms, R' R'', upon the shaft, R, operated by means of a hand lever, R''', in the manner and for the purposes set forth.

Second, We claim the adjustable spring rests, N' N'' when arranged and operating in the manner and for the purposes set forth.

Third, We claim the spring arm, n, spring catch, m', pitman, n', and bent lever, n'', in combination with the lever, K'', clutch, I, and rod, l, all arranged and operating so as to throw the pulley wheel, H, in and out of gear with the shaft, t, substantially in the manner and for the purposes set forth.

MACHINE FOR MAKING PRINTERS' RULES—Richard Doble and M. Angelo Starr, of Richmond, Ind.: We claim the combination of the graduated plates, H H, having arc-formed and radial graduations, and guide bars, J J, with their clamping screws, g g, and screw clamps, h i h i, the whole applied, arranged and operating substantially as described, in relation to the saw, D, for the purpose set forth.

[By a combination of graduated plates, guide bars and clamps, arranged in relation to a circular saw, for mitering or otherwise cutting off the rules to the desired length, a very perfect and efficient machine is obtained.]

RAILROAD CHAIRS—Henry A. Landry, of Camden, N. J., assignor to R. G. Ransford, of Troy, N. Y.: I claim the improvement of a projecting piece of metal either cast on the railroad chair, or made of wrought iron or steel, and affixed and rising up alongside of the rails on railroads where two rails meet, and of sufficient hight to receive all or a part of the weight of the machinery, while passing over that particular part of the rails, as described, disclaiming any right to any particular form or pattern of chair to which my improvement may be applied.

CAR COUPLINGS—Wm. Layland, of Mixerville, Ind.: I claim the employment of the combined adjustable latch and catch, F T, when constructed and operated substantially as described for the purposes set forth.

VENTILATING REGISTERS—Joseph Leeds, of Philadelphia, Pa.: I claim, in combination with a register, the hanging of the valve, A, by its center, as shown, so as to make said valve a regulator or cut-off to the ascending current of air, from N to M, and at the same time a regulator of the ingress or egress of air to or from an apartment, and thus causing a register to serve the purpose of a ventilator, as described.

MACHINE FOR BENDING UMBRELLA RIBS—Ferdinand Lehr, of Hoboken, N. J.: I do not claim a mandrel around which the wire is bent by a revolving stub, as such mandrel has been affixed to the shaft carrying the revolving stub; in that case, however, difficulty existed in removing the spoke or rib, when bent, from off the said mandrel, but by my machine, the mandrels and bending stubs withdrawing from each other, and the mandrels pulling out of the hole or eyes, this difficulty is avoided.

What I claim is, first, A reciprocating pincer, taking the wire from a fixed, and drawing the same through the machine, dropping said wire, and then returning below to its previous position, so as to be out of the way of the bending or coiling of the wire into eyes or loops, as set forth.

Second, I claim attaching said pincers and traveling carriage by one side thereof, while the power for sliding said pincers lengthwise of the machine is applied to the other jaw, whereby the clamping and releasing of the wire is effected by the act of moving said pincers, as set forth.

Third, I claim attaching one end of said pincers on a stud or shaft, in combination with the stops, 6 and 7, spring, 9, and slotted connecting link, f, whereby the sliding, clamping, depressing and elevating motions are given to the pincers by the reciprocations of said rod, f, as set forth.

Fourth, I claim the shear, i i, receiving the compound motion set forth from the cams, n and 10, in the manner and for the purpose specified.

Fifth, I claim the clamping levers, k k', in combination with the ledges, 13 14, and shafts, p p', that press against and hold the wire while the loops are being formed as set forth.

Sixth, I claim the mandrels, in combination with the turning shafts and stubs, when the said mandrels are projected from the blocks, or their equivalents, for the wire to be bent around the same, to form the loops or eyes in the spokes or ribs, and withdrawn from said eyes, when the same have been bent, substantially as set forth.

Seventh, I claim the arrangement of the sliding bar, b, and the connections therefrom to the clamping levers, k k, and slides, m m', whereby the clamps and mandrels, z, are simultaneously actuated as set forth.

Eighth, I claim the sliding stocks, v v, carrying the shafts, p, and turning stubs, for allowing the withdrawal of said stubs out of the way of the traveling pincers, substantially as set forth, and in combination therewith, I claim the bar, n', and connections therefrom to said stocks, v v, for communicating endwise motion to said stocks, for the purpose, and as specified.

Ninth, I claim the sliding mandrel, z', and turning shaft, p 2, connected as set forth in combination with the jaws, 32, or their equivalents, for turning the eye or loop in the end of the spoke, or rib, as described and shown.

Tenth, I claim the arrangement of the cranks, q and t, and slotted connecting rods, q, and t', for communicating motion successively to the slides, r and u', and from the same to the turning stubs or loop formers, as set forth.

MILK COOLERS—Joseph Mansfield, of Jefferson, Wis.: I claim the improved portable milk cooler, when constructed in the manner and for the purpose set forth.

HEMP BRAKES—Richard Mansley, of Philadelphia, Pa.: I do not claim, broadly, the employment in hemp brakes of horizontally moving slides, with bars so situated that the hemp may be presented vertically to the machine, as such a device has been heretofore used.

But I claim operating slide, D, with its transverse bars by the cam, H, arm, G, and spring, J, when arranged substantially as described, and when the said spring is so graduated that the slide shall instantly recede after reaching the limit of its outward movement, as and for the purpose set forth.

MACHINERY FOR TARRING OAKUM—Richard Mansley, of Philadelphia, Pa.: I claim the perforated vessel, F, or its equivalent, placed within a stationary vessel, D, which contains the compound for tarring oakum, a jet of steam being admitted to the stationary vessel, while a reciprocating motion is imparted to the perforated vessel, as and for the purpose set forth.

HORSE SHOE MACHINE—B. A. Mason, of Newport, R. I.: I claim the combination of the four hammers, arranged in pairs, the two constituting each pair being mounted to strike simultaneously, and in opposite directions, and the two pairs working at right angles with each other, or nearly so, substantially as described and for the purpose set forth.

I also claim the employment of an elastic bush, in the connection of the hammers with the cranks by which they are operated, substantially as and for the purpose set forth.

HOLDERS FOR LAMPS—Charles Monson, of New Haven, Conn.: I claim the mode or means, substantially specified, of counterbalancing the system of levers or lazy tongs, or the same and one or more articles suspended from, or supported by them, and this, whether the counter-balance weight be applied so as to push or pull on the levers of the lazy-tongs, as explained.

I also claim the method substantially, as described, of steadying the tube or rod, or its equivalent, suspended or extending from the lower termination of the system of crossed levers or lazy-tongs, viz., by the collar or slide, p, the levers, o, o, and the connections, f, g, applied to the part, e, and the lazy-tongs, and made to operate essentially, as specified.

CONSTRUCTING A COMBINED STREET-PAVEMENT RAIL ROAD TRACK—Richard Montgomery, of New York, N. Y.: A combined street pavement and railroad track constructed substantially, as shown and described.

REVOLVING FIREARMS—Henry S. North, of Middletown, and Edward Savage, of Cromwell, Conn.: We are aware that many applications of packing rings or thimbles, have been made to breech-loading fire-arms, to be acted upon by the force of the explosion, to close the joint between the chamber and the breech, and the application has been made to fire-arms of the same kind, of a thimble to be acted upon by a similar agency, to close a joint between the chamber and barrel. We, therefore, disclaim, entirely, the use of rings or thimbles when not applied as herein described, in combination with a rotating chambered-cylinder, having also a longitudinal movement.

But we claim, First. The employment of the movable, cylindrical bushing-rings or thimbles, b, b, applied substantially, as herein described, within cavities, i, i, formed in the front portions of the chambers of a rotating, chambered-breech, which has a longitudinal movement to operate and be operated upon, substantially, as specified in combination with a valve-like seat, e, e, which is formed upon the rear of the barrel.

Second. The combination of the slide, F, working in the bottom of the cylinder frame, A, and the double-jointed trigger-guard, D, E, part of which constitutes, also, a part of the lever, through whose agency the rotation of the cylinder and cocking of the hammer are effected, the whole operating substantially as and for the purpose specified.

[This is an improvement in that class of revolving fire-arms, in which the many-chambered cylinder rotates upon an axis parallel with the bore of the barrel. One feature of the invention is, the employment of movable cylindrical bushings or thimbles, fitted into centers joined around the front portions of the rotating-cylinder in such a manner as to fit to an external seat at the rear end of the barrel, while the latter enters within the chambers, and as to allow the gases resulting from the explosion of the charge to act upon their rear ends to drive them forward against the barrel, and make them form close joints therewith, for the purpose of preventing the escape of fire or gas.

Another feature of the invention is, in the combination of a slide fitted to work longitudinally under the cylinder-frame, and a jointed trigger-guard, part of which also constitutes a part of a lever for effecting the operations of rotating and locking the chambered-cylinder, and of cocking the lock, such combination being for the purpose of preventing the mechanism by which the above-mentioned operations are effected, from encumbering the exterior of the piece in any of its conditions, and allowing such mechanism to be operated by the left hand to repeat the fire without removing the piece from the shoulder, or even disturbing the aim.]

WASHBOARD—John K. O'Neal, of Kingston, N. Y.: I claim the flexible rubber, B, constructed as described, and combined with the washboard, A, so that its upward movement shall be assisted by a spring, or its equivalent, arranged substantially as specified.

COLORING AND CURING TOBACCO-STEMS—Benj. Payn, of Albany, N. Y.: I claim coloring and curing tobacco-stems at one operation, by subjecting them to the action of steam, as and for the purposes set forth.

CLOTHES-SPRINKLER—Thomas Payne, of Ridgefield, Conn.: I claim a clothes-sprinkler, having an interior self-closing stopper, and made and operating substantially in the manner and for the purpose set forth.

FURNACES—Samuel Pierce, of Troy, N. Y.: I claim the series of detachable or removable heat-radiating plates, J, J, constructed with points or stems, a, a, projecting from their surfaces, both of the surfaces being radiating surfaces, in the manner and for the purposes substantially as described.

Also, in combination with a hortizontal fire-box and fire-chamber, and the outer casing, K, I claim a series of plain heat-radiating plates, or a series of corrugated heat-radiating plates, arranged substantially in the manner, and for the purposes as described.

CARPET-SWEEPER—Samuel F. Pratt, of Roxbury, Mass.: I claim, in combination with the case, A, and the rotary brush, B, of a carpet-sweeper, a serrated or toothed-clearer, E, applied so as to cleanse the brush, during and by its revolutions.

I also claim the arrangement of serrated or toothed-clearers on opposite sides of the brush, in order that it may be cleansed while being rotated in either direction.

I also claim the arrangement of the serrated clearer in the case of the carpet-sweeper in such manner that the said clearer shall form part of, or be maintained by the dust-receptacle. I do not claim the application of a single elastic-tired driving-wheel, to the driving-wheel affixed on the brush shaft; but claim the arrangement of two of the elastic-tired wheels on opposite sides of the driving-wheel of the brush-shaft, as described, and so applying the said shaft in the case and to the fork of the handle, as to enable the brush-wheel to be forced in close contact with its drivers, not only when the machine is moved in either direction, but by the force exerted through the handle, and to so move the machine, the same insuring the rotary motion of the brush, whenever the machine may be in the act of being moved on and over a carpet.

MODE OF ATTACHING THILLS TO VEHICLES, &c.—R. B. Prindle, of Coventry, N. Y.: I claim the flange on the bolt or pin, so made and inserted that it cannot be removed when the joint is varied from the position in which the bolt is introduced.

COUPLING GUN STOCKS WITH PISTOLS—Samuel Colt, of Hartford, Conn.: I claim the neck piece, B', with its projecting end, B2 B2, passing under shoulders in the lock frame, in combination with the holder pins, d d, and clamping bar, f, arranged and operating substantially as described, for the purpose set forth.

FILE HANDLES—William W. Draper, of Greenfield, Mass.: I do not claim the application of jaws to tool handles.

Nor do I claim the described mode of operating such jaws.

But I claim the centralizing socket, or socket piece and spring, in combination with the handle and the fastening jaws and their operative mechanism, applied within the said handle, the whole being made to operate substantially in manner as described.

BATHING APPARATUS—Charles Escudier, of Pattersonville, La.: I claim the new application in bathing apparatus of two boilers and steam pipe connected thereto, affording, when united, an apparatus for the application of whatever kind of bath that may be desired.

OX YOKES—James D. Foster, of Montgomery, Ala.: I claim constructing the bows, B, of four parts, a a b b' the parts, a a, being permanently attached to the stock A, and the parts, b b', attached by hinge joints, c c, to the parts, a a, and provided with a fastening, C, substantially as and for the purpose set forth.

[The object of this invention is to facilitate the adjustment of the yoke to the necks of the animals, and also to facilitate its detachment therefrom. The invention consists in forming each bow of the yoke of four parts, the two upper parts of each bow being permanently attached to the stock, and the lower parts attached to the upper parts by hinges or joints, so that the lower parts may be opened or distended to be readily fitted and secured on the necks of the animals, or removed therefrom.]

MACHINERY FOR MOVING RAILROAD CARS ON RAILWAYS—Ambrose Foster and Harvey Brown, of New York City: We do not claim the moving of cars on railroads by stationary power and an endless rope or chain, for that is an old device.

But our improvement consists in the mode of attaching to and removing the cars by means of the devices above set forth.

We claim, first, The rope-supporter, H, constructed and arranged substantially in the manner and for the purposes set forth.

Second, We claim the sliding rods, E, with the coiled springs, F, attached, or their equivalent, for the use and purpose set forth.

Third, We claim the grab or catch, G, constructed, arranged and operated substantially in the manner and for the purposes set forth.

VEGETABLE CUTTER—J. Fraser, of Rochester, N. Y.: I claim the combination of the eccentric rod, k, arranged substantially as described, with the pivoted or adjustable bed, B, which bears the knife, G, for the purposes specified.

CATTLE PUMP—Hugh Gerred, of Sparta, Ill.: I do not claim, broadly, a valvable bucket attached by a pulley to a platform, irrespective of the arrangement of the parts shown and described, for such device has been previously used, and may be seen in the device of Jared Ayers, patented April, 1856.

But I claim the arrangement and combination of the guides, f, bucket, D, the latter having a valve, c, clasp, d, and spring, e, the trough, F, platform, E, and wheels m l i g, as and for the purposes shown and described.

[This pump is formed by a peculiar arrangement of gearing, connecting a treddle with a lifting pulley, whereby cattle, in treading on the platform, in quest of drink, will, by slightly depressing the platform, raise the water from the well.]

STEAM VALVE—Henry Goulding of San Francisco, Cal.: I claim, first, Supplying the working cylinder of the engine or machine at each successive stroke with its impelling gas or vapor from reservoirs previously charged therewith, and under the control of a valve or valves, essentially as set forth, the same serving as a substitute for a cut-off to work the gas expansively, in the manner described.

Second, Operating a valve in part or in whole by the gas or steam, at full pressure, from the supply pipe acting to propel it in the one direction, when the same is used in concert with an opposing force to the valve, produced by the expansion of the gas in its passage to or performance of its work, substantially as specified.

Third, The combination of the valve, B, and valve cylinder or case, A, with its reservoirs, E F, and the several inlets or outlets for action together, in the manner described, and whereby the one valve, B, is made to govern the ingress and egress of the gas to or from the reservoirs as well as to control the inlet and exhaust of the working cylinder, as set forth.

CORN-PLANTERS—James Hughes and Nathan Stoneleiper, of Cambridge, Md.: We claim the detached arrangements of the gravitating trigger, H, connecting rods, I, perforated slide, F, hoppers, e and e', and scorer, D, operating as described, to deposit seed at each pressure, and relaxation of the thumb of the driver.

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HEATING APPARATUS—Rensselaer D. Granger, of Philadelphia, Pa. Ante-dated Nov. 24, 1858: I do not claim, broadly, an air chamber situated in a casing and exposed to the action of the fire within the same, as such a device has been heretofore used.

But I claim combining the air chamber, C, with the separate perforated chamber, H, having an independent communication with the air, substantially as set forth, so that the said perforated chamber may serve the double purposes of consuming the gases arising from the ignited fuel, and of preventing the rapid destruction of the bottom of the chamber G, by the action of the fire.

COAL STOVES—R. D. Granger, of Philadelphia, Pa. Ante-dated November 24, 1858: I claim hanging within the stove, and immdiately above the fire, a perforated chamber H. when so constructed and arranged, that the air shall have free access to the interior of said chamber, and when the latter shall admit of being readily raised and lowered, or its position in regard to the fire, otherwise altered, for the purpose specified.

FISH TRAP—Robt. Gray, of Anson, Me: I claim the strainer, the vibrating slats, T T', and the V-shaped chambers V V', all in the manner and for the purposes specified.

FASTENING FOR BREASTPINS, &c—Benj. F. Grinnell, of New York, N. Y.: I claim the permanent hook, D, and spring, E, in combination with the hinged pin, C, of a breast-pin, or other article of jewelry, when the spring is so bent as to direct the pin, when the latter is depressed into the hollow of the hook; and when the spring and hook are otherwise arranged in respect to each other, substantially, as set forth.

HOUSE VENTILATION—John H. Griscom, of New York, N, Y.: I claim the employment of an auxiliary flue or tube, connecting the hot-air flue with the ventilating-flue, in the manner and for the purpose proposed.

COTTON CULTIVATORS—John M. Hall, of Warrentown, Ga.: I claim, in combination with the series of adjustible, revolving hoes, the scrapers, K, K, in advance of them, substantially in the manner and for the purpose described.

APPARATUS FOR EVAPORATING SACCHARINE JUICES—Lyman P. Harris, of Mansfield, Ohio: I claim, First, The stationary, yet portable fire-place, B, with the stops, C, C, and the springs, H.

Second, I claim the portable, movable, and inclined furnace, A, and its combination with the stationary fire-place.

Third, I claim the handles, M, and their springs, L, and their combination with the springs, H, also, the rod, F, or its equivalent.

Fourth, I claim the racks, O, and their combination, also the movable flue or plate, P, and its rod, R, and their combination with the movable furnace, A, and stationary fire-place, B.

Fifth, I do not claim the heater, 8, nor evaporator, 10, as my invention, but I claim, as an improvement, the application of one or more strainers, 2, and valves, 1, to the heater and evaporator.

COFFEE ROASTERS—Theodore Heerman, of Mitchelsville, Tenn.: I claim, First, The specified arrangement of the plates or shelves D, D, for the purposes set forth.

Second. The combination of a window or windows in one or both ends of a coffee-roaster, with the inclined, elevating plates or shelves, substantially as, and for the purposes set forth.

CORN PLANTERS—John L. Hoag, of Geneva, Ill.: I claim the arrangement and combination of the arm (g,) lever, K, and bar, H, said lever serving as an oblique brace to hold the bar H, (as is shown in Fig. 2,) as and for the purposes set forth.

I also claim the arrangement and combination of the lever, (h,) slide (i,) lever (j,) upright, Q. bar, P, and swinging-frames, O, M, as and for the purposes shown and described.

[The nature of this invention consists in the peculiar manner of operating a distributing slide, and also, in a peculiar manner of arranging the furrow, and covering shares, whereby they may be raised and lowered as desired.]

REVOLVING HARROWS—Mark W. House, of Cleveland, Ohio: I claim the combination, with the spindle, of a revolving harrow, of the cap, e, and box, d, for the purpose, and substantially in the manner described,

CATTLE PUMPS—John H. Irwin, of Carlenville, Ill.: I do not claim the use of rising and falling platforms separately considered, but claims the platforms B, B', weight, F, drum, C, and pulley, D', placed loosely on drum, C, and connecting with it by the pull, e, and ratchet, D, the whole being combined and arranged to operate as and for the purpose set forth.

The cattle walk upon a platform that is capable of rising and falling, and which is connected by means of ropes or chains, to a drum that has a pulley of comparatively large diameter placed loosely upon it. The weight of the cattle depresses the platform, rotates the drum and pulley, which can only move in one direction, and so elevates the water.]

COMPOSITION FOR LINING METAL PIPES—Wm. Johnston and Hugh Forbes, of Brooklyn, N. Y.: We do not claim inserting an india rubber, gutta percha, or equivalent pipe previously made into a metallic pipe; nor do we claim the apparatus by which it is applied. But we claim the composition of matter, substantially as set forth, for lining metallic or other pipes, or surfaces of a similar kind, substantially as set forth.

HARVESTERS—Wm. F. Ketchum, of Buffalo, N. Y.: I do not claim the use of a cap, or an opening in the guard-tooth, generally to prevent clogging; but I claim the combination of the openings in the guard-tooth below the cutters, with the caps above the cutters, substantially as described.

ROLLING AND PRESSING WOOL—Wm. W. Purdy, of Liverpool, Ohio: I claim the combination of the sectional rollers. I and 1', with the strap, F, and breast-piece, E, for the purpose of rolling and pressing fleeces of wool, as describe

TRUSS SPRINGS—J. W. Riggs, of New York City: I claim constructing springs for trusses in the manner and for the purposes substantiaily as set forth.

METHOD OF PACKING CARTRIDGES—E. K. Root, of Hartford, Conn.: Not wishing to confine myself to any exact shape of package, peculiar mechanical construction of box, or arrangement of the cartridges and caps, what I claim is putting up cartridges between two blocks, or their equivalents, substantially as described.

I also claim forming in the package, or holder, as described, a receptacle or receptacles for containing caps or other primings, substantially as described.

SEEDING MACHINES—John F. Seaman, of Clyde, N. Y.: I do not claim the distributing device formed of seed cells, f, made in a cylindrical head, e, in connection with cut-off brushes, h, for this is an old and well-known device.

Neither do I claim, broadly, rotating covering shares, irrespective of the construction and arrangement shown.

What I claim is, operating the seed-distributing device by means of the part, b, of the handle, C', attached by a pivot, d, to the other part, c, of said handle, and connected at its lower end to the shaft, E, by a cord, or chain, i, the above parts being used in connection with the spring, F, attached directly to the other handle, C, of the implement, and to the shaft, E, by a card or chain, k, the whole being arranged substantially as and for the purpose set forth.

This is a good seed-planting device, designed for planting seed, chiefly corn, in check-rows. It is not liable to become choked, and is perfectly under the control of the operator.]

HORSE-SHOE MACHINE—Solomon Shetter, of Allegheny, Pa.: I claim, first, The curved arms, w 1, of clamps, s, moved and operated by the friction rollers, 2, and the backward and forward movements of table, c, when the clamps, s, are used in connection with the dies, t and w, as described and for the purpose set forth.

Second, The use of the flexible strip, n, for the purpose of operating the clearer, u, as described and for the purpose set forth.

Third, The arrangement on the upper surface of table, c, of dies, t and w, springs, x, the under jaw, v, of the shears and the clearer, u, when used and operated in connection with the clamps, s, friction rollers, 2, roll, t 1, shear, d, and swage, f, as described and for the purposes set forth.

SWEEPING MACHINE—Stephen Wm. Smith, of Brooklyn, N. Y.: I claim, first, The combination of the gears, F and G, with the driving wheel, constructed and operating substantially as described and for the purposes specified.

Second, The method of adjusting the brush by the plate, K, which admits of both vertical and lateral adjustment, as described and specified.

Third, I also claim preventing the escape and rising of the dust, by means of the flexible curtain, L, arranged and operating substantially as described and specified.

MANUFACTURE OF WHITE LEAD—Benj. F. Smith, of New York City: I claim the manner of filling the chamber with metallic lead by means of the open work tables or racks in which the lead in detached pieces rests, arranged one above the other in successive and close series substantially as described, and whereby a more thorough and equal circulation of the fumes or gases amongst the lead is produced.

I also claim constructing the converting chamber with an inclined bottom, substantially as and for the purposes set forth.

I also claim the method described of extracting from the converting chamber the carbonate of lead, and other incidental products, by means of a current or currents of water passing through said chamber from top and bottom, substantially in the manner and for the objects set forth.

I also claim subjecting the carbonate of lead and other incidental products, previous to their extraction from the converting chamber, to the action of steam, substantially in the manner and for the purpose specified.

INSTRUMENT FOR TURNING THE LEAVES OF MUSIC BOOKS, &c.—C. B. Thayer, of Boston, Mass., assignor to himself and Chas. Robinson, of Cambridgeport, Mass.: I claim the double holding cords, E E E, elastic springing cords, G G G, or their equivalents, back, or catch band B, provided with clamps, C D, and notch, and the curved concentric rod or way, F, arranged and operating in connection with, and in relation to each other, substantially in the manuer and for the purpose specified.

I also claim the escapement catch, H, constructed, arranged and operating in connection with the curved rod, F, and thimbles of the holding cords, E E E, substantially as described.

HORSE-POWER—Ferdinand M. Sofge, of Columbus, Ga.: I claim the combination of the cogged wheel, A, having the supporting flange, No. 1, and the wheel, B, with corresponding cogs and bearing, revolving upon the supporting ring, I; the whole constructed and operating substantially, as and for the purpose set forth.

COOKING STOVES—P. P. Stewart, of Troy, N. Y.: I claim, in combination with a stove, such as described, making the front plate of the oven open with doors, and an apron to receive and hold a tin kitchen or roaster substantially as specified, that the heat radiated by the front plate of the fire-chamber may be aided by the heat radiated by all the oven plates, as specified when combined with an end door, whereby the draught may be controlled without the aid and independent of the front doors. And I also claim the boiler having a removable cover and two inclined flues, which are separate at the lower end, united into one at top to connect with the chimney substantially as described, in arrangement with the exit flue space, to which the boiler is fitted, and into which the gaseous products of combustion are discharged from the series of direct and return-flues, substantially as and for the purpose specified.

§ DEVICES FOR GATHERING GRAIN INTO GAVELS—W. M. Waggoner, of Middletown, Ind.: I claim the stationary fingers, E, E, G, G, and the fly or gathering fingers, H, H, attached to a suitable framing or stanchions, mounted on wheels, and arranged to operate substantially, as and for the purposes set forth.

[This device can be used by an operator, and shoved along the ground underneath a windrow of grain which it will gather into gavels, and bind each gavel into a sheaf, the work being performed with great facility and very expeditiously.]

DEVICES FOR REEFING SAILS—Louis B. Wakeman, of Baltimore, Md.: I claim the employment of the smooth-surfaced clamp E, E, as described, when in combination with the forked screw-bolt, 5, or its equivalent, carrying the blocks through which the rolling halyards, d', d', pass for the purposes set forth.

I also claim giving direction to windlass ropes, d, d, by the bent arm, b, when in combination with the clamp, E, E, and forked screw-bolt, 5, when fitted with an ordinary block, operating in the manner and for the purposes set forth.

HARVESTERS—Wm. M. Whitely and Andrew Whitely, of Springfield, Ohio: We claim a finger so constructed, that the slot or opening above the cutters shall increase in capacity from front to rear, in combination with the clearing projection described, passing directly into the rear corner of said opening in the manner described for the purpose specified.

We also claim forming the clearing projections of a bent extension of the cutter, substantially, as described.

RAILROAD CHAIRS—John Young, of West Galway, N. Y.: There may be modifications of my construction, therefore, I do not design to confine myself to the precise devices shown.

I claim the combination of bearing surfaces, a, capable of forming any desired angle with each other, and the securing portion, a', of the chair, substantially as and for the purpose set forth.

GRAIN-FAN AND CORN-SHELLER—Hamilton E. Smith, of Philadelphia, Pa., assignor to himself, D. B. Nelson, of Cortland Co., N. Y., and John L. Myers, of Chemung Co., N. Y: I do not claim broadly combining a grain-fan and a corn-sheller in one instrument; I claim arranging the spiked roller, C, and slotted shield, D, of a corn-sheller on the frame of a grain-fan in respect to, and in combination with the seive frame, E, blower, G, and inclined plane, J, of the said grain-fan, in the manner herein described, so that the said blower, seive-frame, and inclined plane may serve the purpose of separating the cobs from the shelled kernels of corn, and the latter from the chaff and other refu

THE MANUFACTURE OF STEEL—Frantz Anton Lohage, of Unna, Prussia, assignor to Edmund Leopold Bewzon, of Boston, Mass. Patented in England, Jan. 29, 1850: I would observe that the commencement of the process, that is, the fusing and boiling the pig iron is similar to the operation usually carried on in the pudding furnace in the manufacture of wrought iron, I do not, therefore, intend to claim such part of the process.

But I claim regulating the heat and stopping the decarbonization of the fused mass of metal in the finishing process in the puddling or reverberatory furnace, as set forth, before it becomes converted into malleable or wrought iron, and whereby I obtain steel in the manner specified.

PADDLE WHEEL—Nelson Orcutt (assignor to himself and G. W. Gregory), of Binghampton, N. Y.: I claim the centrally suspended paddle or bucket, without any stop, means, difference of area or of weight for holding it in a working position, but left entirely to the action of the forces exerted upon it during the revolution of the wheel, as set forth.

[An engraving of this will shortly appear in our columns.]

UMBRELLA FRAMES—Joseph Bloom, (assignor to R. E. Rogers), of Philadelphia, Pa.: I claim, first, The bow or rib, constructed substantially as described. I am aware that the bow or rib, and the brace or sustaining rod have been attached to collars upon the standard by a piece of metal having an enlarged end affixed to the end of the bow or rib, and a like piece of metal affixed to the end of the brace; the enlarged end fitting into a slit of a sheet metal collar, the flange of which must be swaged down upon the enlarged end, in order to hold it in place, and I therefore do not claim this method; but I claim connecting the bow or rib and the brace, or sustaining rod to the collars upon the stem or standard, by the means set forth. I am also aware that the end of the brace or sustaining rod has been connected to the bow or rib by the end of the brace being riveted to a band, which may be sprung into a groove in the inner surface of the bow or rib, and I therefore do not claim this method of connecting the two parts here named: but I claim connecting the brace or sustaining rod to the bow or rib by the spring-board embracing the bow, as set forth.

RE-ISSUE.

VENTILATING WINDOW FOR RAILROAD CARS—George Neilson, of Boston, Mass. Patented May 30, 1854: I claim the convergent ventilating window as made with deflecting and light penetrating sides or surfaces, and an air opening, and a closing window or cover, essentially as explained and to be applied to the opening of a side of a railway car, substantially as specified,

And I claim the arrangement of a deflector guard entirely around the window opening, and in respect to the deflecting sides, as specified, not intending to claim a deflector or guard as applied to a car-window opening, but to claim its arrangements on four deflecting sides or planes, and entirely around the opening between them, as set forth.

ADDITIONAL IMPROVEMENT.

HOMINY MORTARS—John Reezer, of Chillicothe, O. Patented March 2, 1858: I claim the application and combination of the slide with its spring, and roughening of the lower end of the pestle, for the uses and purposes specified and substautially set forth.

DESIGN.

COOKING STOVE—J. K. Hyde, of Troy, N. Y.

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INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of $5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY,
No. 128 Fulton street, New York.

### Minerals of California.

The Santa Cruz (Cal.) *Sentinel* contains a brief account of the great mineral wealth and the variety of minerals found in the California coast range of mountains. It states that these elevations, extending through the counties of Santa Clara and Monterey, and bounding the western line of the Tulare Valley, is little known to the geologist, mineralogist and paleontologist. They contain the quicksilver mines of New Almaden and New Idra; gold is known to exist in Santa Cruz and Monterey; a vein of silver ore has for many years been opened at Alisal; and silver, almost pure, has been found near Pacheco's Pass. Other minerals also abound, among which we may enumerate copper, lead, cobalt, chrome, antimony, copperas, alum, saltpeter, gypsum, alabaster, lime rock, asphaltum, and coal veins of great value. Fossils of fish, crustacea, mollusca, infusoria, mammalia, polypi, and of vegetation are so extraordinarily abundant throughout this region that it is more curious to see the geological formations without fossils than with them. The range offers to the mineralogist and paleontologist one of the richest fields of observation on the face of the earth, if not the richest—exceeding the *mauvaise terre* of Nebraska. Humboldt and other travelers in the Peruvian Andes, mention the existence of fossil mollusca in the immediate proximity to the richest mines. It seems that our Pacific coast range shows similar indications for the future.

### Camphor Ice.

This substance, which is a very delightful thing to rub on the exposed parts of the person, to prevent chapping and sores from cold, is made as follows:—Take one pound of almond oil, one pound of rose water, one ounce each of wax and spermaceti, two ounces of camphor, and one ounce of rosemary. Melt the camphor, wax, and spermaceti in the oil by a gentle heat, then add the rose water, stirring briskly or rubbing in a large mortar, and lastly, the perfume. The consistence may be varied by increasing or diminishing the proportion of wax and spermaceti.

### Photographic Agents.

Under the recent discoveries in photography by M. Niepce de St. Victor, of Paris, it is found that almost all soluble chemical substances are rendered available in the practice of the art. Take a sheet of paper and impregnate it with any soluble substance, let it dry in a darkened room, and then isolate it under a negative, take it back to the dark room, and treat it with any of the re-agents capable of combining with the substance operated upon, and you will have a picture of almost any color you desire; for example, if the paper be impregnated with nitrate of uranium, then exposed in the camera, and treated with a solution of red prussiate of potash, a beautiful red picture will be obtained; and if this be afterwards treated with sulphate of iron, a fine blue picture will be produced.

### The Great Chess Contest.

The match between Morphy and Anderssen, the celebrated German player, has terminated in favor of Morphy, who won seven games to Anderssen's two, and two drawn. Herr Anderssen is a professor of mathematics in one of the gymnasiums of Breslau, and ranks among the very foremost of European chess-players. He carried off the first prize in the London Chess Tournament held in 1851, against Szen, Mayet, Horwitz, Staunton and others.

Mr. Morphy, says the *Illustrated News of the World*, may now fairly take rank as the champion of the Old World as well as the New. No Englishman is found to do him battle, and every foreigner of note has now, with the exception of Der Luja, fallen an easy prey to the youthful conqueror. It is a question whether he be not the finest player to whom the world has yet given birth.

### To Destroy the Turnip Fly.

Mr. Wimball, of Adermaston, England, has taken out a patent for destroying the turnip fly and other insects injurious to crops, and it may be useful in the same manner for destroying the cotton fly, and the wheat midge in our country. The apparatus consists of a small furnace placed on a small wheel-barrow, the fire being operated by a revolving fan blast, through a strap from a pulley on the wheel shaft. On the top of the furnace is a tube chimney bent downwards and capable of being turned in any direction. Sulphur is thrown in small pieces, from time to time, on the fire, and the blast directs the gases thus generated through the bent smoke tube among the plants on which the insects are operating. This appears to be a useful invention, and one not expensive or difficult for any farmer to carry out into practice.

### Ornamenting Glass.

J. J. H. Brianchon, of Paris, and the chief of the Sevres porcelain manufactery, has invented a series of compositions for enameling porcelain, glass and similar materials, to imitate gold, white and colored mother-of-pearl, the various and changing reflections of shells, of all kinds of minerals, and of the optical prism. The substances used are metallic salts, with carbonets of hydrogen, which are laid on a glazing or varnish, and then subjected to the proper heat, in a furnace. The patent was granted this week, and although the processes are too long to describe here, we can say that the products are beautiful, not only from the extreme delicacy of the tints, but from their durability and perfection.

### Trees for Telegraph Posts.

A correspondent proposes that poplar trees be planted along all our railroads and used as telegraph posts. The under branches can be cut down, so as to leave the trunks as clear as the posts now employed. It will take some years for such trees to grow, but if they then make permanent posts, not subject to be blown down during gales of wind, they will be superior to bare poles and should be planted.

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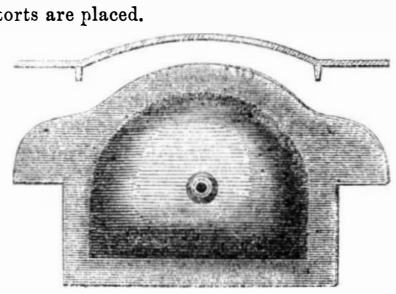
# New Inventions.

### Preserving Butter.

A patent has been secured by W. Clark, of London, for the following method of preserving butter :—The butter is first well beaten in the usual manner after churning, then placed between linen cloths and submitted to severe pressure for removing whey and water. It is now completely enveloped or covered with clean white paper, which is coated on both sides with a preparation of the white of eggs, in which 15 grains of salt is used for each egg. This prepared paper is first dried, then heated before a fire, or with a hot iron, just prior to wrapping it round the butter. It is stated that butter may be kept perfectly sweet without any salt for two months, when thus treated, if placed in a cool dry cellar. The submitting of butter to pressure, as described, is a good plan, and one which we recommend to all our farmers. They can easily practise it with a small cheese-press.

### Floyd's Retort Covers.

The doors or covers of gas retorts have hitherto been made of cast iron, and have not only been heavy, but for want of homogeneousness in the compactness of their structure, quickly wear out by oxydation, and sometimes break upon being dropped on the floor of the building in which the stack of retorts are placed.



Our illustration represents a retort cover made of malleable iron, only a quarter of an inch thick, and properly convexed, as shown in the sectional view, which gives great strength. The cover can be made of any shape, to suit various retorts, and it was patented as a new article of manufacture July 21, 1857, by the inventor, J. R. Floyd, who assigned the invention to Theodore C. Kibbe.

Any further information can be had by applying to the manufacturer, Silas C. Herring, 740, 742, and 744 Greenwich st., New York. It is durable, light, and economical.

### Improved Shower Bath.

Refreshing to the weary, cooling to the excited, and healthy to all, is the shower bath, at once a thing of luxury and a saver of doctor's bills, and our illustration represents a happy arrangement of a portable shower bath that will place this useful piece of furniture within the reach of all.

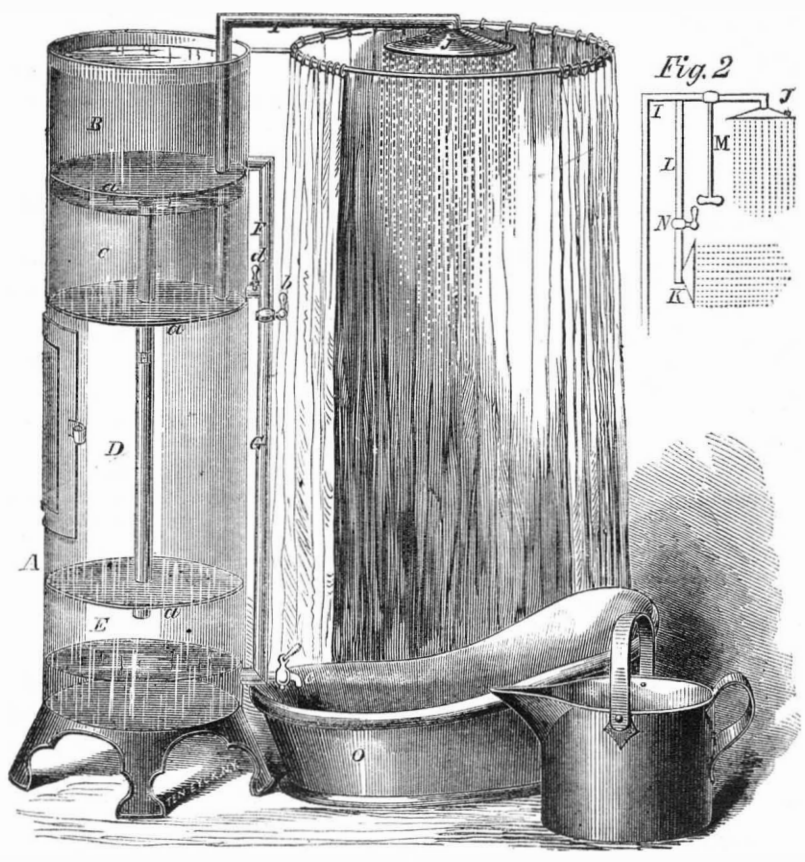
Fig. 1 is a perspective view of the bath, the internal parts being shown as though the outer case were transparent, the actual bath, however, being constructed of sheet tin or other metal.

The bath is shaped like a pillar standing on an open bottom, and the pillar, A, is internally divided into four compartments, B C D E, the compartments being separated by floor, *a*. The chamber, B, communicates with chamber, B, by a pipe, F, in which there is a stop-cock, *d*, to open or close communication, and this pipe, F G, extends down to the lower chamber, E, so that when faucet, *d*, is closed communication is open between B and E. D forms a closet for soap, sponge, towels, &c., in which they can be kept out of the way, the chamber, E, communicates with C by an air pipe, H, and from the chamber, C, a pipe, I, passes through B, and ends in a rose, J. From the pillar, A, there extends a wire curtain ring from which the curtains are suspended to hang over and around the foot pan O, so as to entirely conceal the person taking the bath.

Fig. 2 shows an extra attachment to the pipe, I, by which a shower may be thrown from a rose, K, connected by a pipe, L, with I, on to the back or breast as desired. The stop-cocks, N and M, regulate the streams.

The operation is as follows:—Water is poured into the chamber, B, *b* being closed, and *d* opened, so that it finds its way into C, until that chamber is nearly full. *d* is then closed, and water poured into B, again; now when a bath is required, *b* is opened, and the water in B, passes down E G into the lower chamber, the air rom which passing up the pipe, H, presses on the surface of the water in C and forces it through I, and the rose, J, on to the person taking the bath. There is

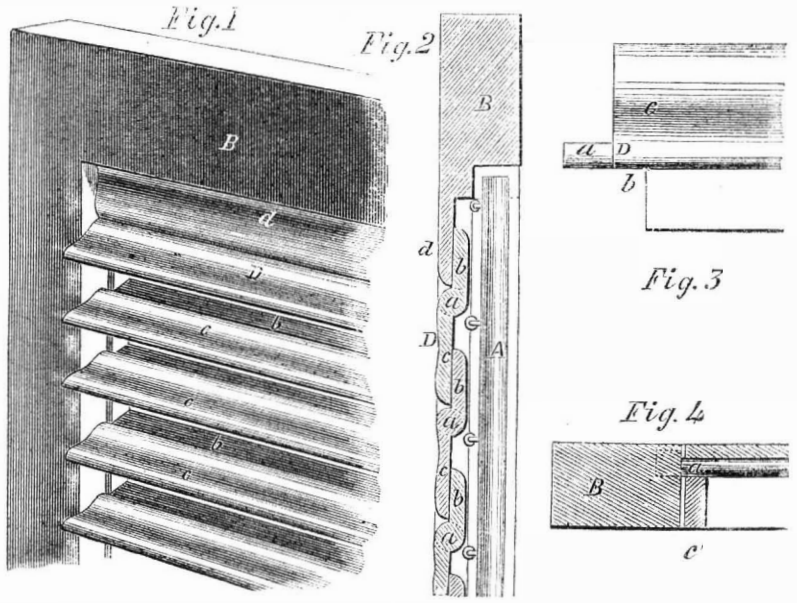
## MANSFIELD'S SHOWER BATH.




a faucet, *c*, in the compartment, E, for emptying it, and a screw tap in J for cleaning it should it get foul. This is one of the most economical and portable shower baths we have ever seen, and we heartily recommend it to our readers, as a valuable aid to that which we sometimes venture to advocate, namely, the improvement of the public health. "Prevention is better than cure," says the trite old proverb, and those persons who daily use a shower bath escape many of "the ills that flesh is heir to."

It is the invention of Jos. Mansfield, of Jefferson, Wis., who will be happy to furnish any further information. It was patented Dec. 14, 1858.

## KELLY & LIVINGSTON'S WINDOW BLIND.




To any one arriving as a stranger in this country from Britain, the green outside window blinds at once strike the attention, and should he have been a traveler, remind him forcibly of the sunnier portions of Europe, where the black smoke of bituminous coal has not clouded the atmosphere, and where the air is pure, exhilarating, and pleasant. Of their convenience no one can entertain a doubt, and any invention which tends to make them more secure and weather-proof is to be regarded with attention. The subject of our engravings is such an improvement, the invention of D. Kelly and W. Livingston, of Grand Rapids, Mich., which was patented February 10, 1857.

Fig. 1 is a pers ective view of part of the blind, and Fig. 2 is a vertical section nearly through the center.

B is the frame, the top of which has a pendant, *d*, and a weather-strip inside, projecting down the sides against the slats, D, the backs of which, *b*, are cut away from the center, *a*, as shown in Fig. 3. The front part of the slats, *c*, when closed as seen in Fig. 2, project and fit in with the back, *b*, and form a front that is perfectly flush the one slat with the other, and perfectly closed against the weather. This weather-strip is seen at C, Fig. 4, and the slats are operated by an inside piece, A; they turn upon a pivot, *a*, which is cut with the slat and forms part of it. The invention consists in hollowing out the back, *b*, so that the front, *c*, of the slat above it will overlap, and also providing the strip, C, against which the slats fall flush, and so prevent the ingress of rain and bad weather generally.

It is a good invention, and further information may be obtained from the inventor as above.

### Soup and Pickles.

On page 256, Vol. XII., Scientific American, we furnished some excellent advice regarding soup-making to our cotemporary, *Life Illustrated*, but it seems to have been rather highly spiced for its delicate cold water digestion. Since that period—nearly two years—it has never forgotten us, but has kept watch and ward over our actions until it has found an opportunity to make a foray on a dish of our *pickles*. The following extract will show how our cotemporary's mind is exercised on this most momentous question :—

"Science should be authority," says our cotemporary. "We bow to the teachings of science. But, sometimes, we think that the dignitary officiating as science has a mote in his eye. The Scientific American directs to boil beets three parts done, and then put them, cut in slices, into vinegar in which have been steeped allspice, ginger, salt, black pepper, and cayenne. After they are kept thus a month, he begs an invitation to help eat them with bread and cheese! Is this process scientific? Is it a healthful mode of preparing vegetables for the stomach, or a scientific way of producing disease? Certainly, it will bring about the *American diathesis*. What is this, Mr. Scientific American? What is *the* disease of this people? And how induced? Are not you 'aiding and abetting' the same, *you*, professedly scientific? Verily hath the 'Scientific' a mote in his eye. We have not forgotten the criticism of the Scientific American on our soup recipe, published some time ago. But we think the above on 'scientific pickles' an original invention, though capable of some 'improvement.'"

It is not surprising that we should sometimes get a mote in our eye, when it is considered that we not unfrequently raise a dust; but having cleared our own vision, we will now proceed to take the *beam* out of our neighbor's. In a very learned manner, he asserts that our pickles will help to produce the *American diathesis*, and in the very next sentence, he confesses ignorance as to what the disease is, and asks our opinion about it. Such presumption and such abasement reminds us of the old story of "the goose in a quandary, who snored when she slept and dreamed of thunder." It affords us some consolation, however, that we can throw some light upon this subject into our neighbor's dingy lantern. There is no such disease as American, European, or African *diathesis*. This term simply means a particular habit of body—good or bad—and our pickles may produce either doldrums or dancing. We prefer the latter, but the former appears to be the *diathesis* produced by our pickles upon our cotemporary. We cannot conclude these remarks upon this topic without paying a proper compliment to the literary execution of the above extract. In point of erudition, ability, and elegance, we think it deserves a position on the scroll of fame alongside of that famous old nursery rhythm :

"Peter Piper picked a peck of pickled peppers—
A peck of pickled peppers did Peter Piper pick."

### Certificate of Patent Validity.

If a patent is sustained in England in a suit to test its validity, it is customary for the Court to grant a certificate of validity to the patentee. We think it would be well to adopt the same practice in our United States Circuit Courts.

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Scientific American.

NEW YORK, JANUARY 29, 1859.

## REMOVAL.

On or about the 1st of February next, the Publication Office of the SCIENTIFIC AMERICAN, and the Patent Agency Department connected therewith, will be removed from 128 Fulton street to the spacious offices in the new building, Nos. 37 Park row and 145 Nassau street; the principal entrance being on the eastern side of the City Hall Park. This change we find necessary in order to meet the continual growth of both departments of our business; and we shall expect, at the time above specified, to show our friends, and such of the public as may feel disposed to call upon us, the most complete and thoroughly organized establishment of the kind in the world.

### Are Patents Valuable?—Lobbying.

In our last issue we noticed the fact that McCormick considered his invention in reaping machines, for which he recently sought an extension of the patent, to be worth to the country over $45,000,000. Now if this estimate is a fair one, it is not extravagant to re-assert what was stated some months ago in the *New York Herald*, that the money value of the patent rights in this country could not fall below the enormous sum of $500,000,000.

Although these rights are constantly passing out of existence at the periods of limitation fixed by law, their places are supplied by others, which prevent them ever falling below that amount. This is one of the few branches of revenue, in fact, in which there is no fluctuation, the tendency being always to an increase. With such enormous interests at stake, of course every effect, every sacrifice that human ingenuity can suggest, is made to renew these rights for such further periods of extension as can be obtained. The spirit of the existing law is unfavorable to these extensions; and it is notorious that the applications for extensions are usually sought by those who have made fortunes out of their patents, and have a very natural desire to hold on to them as long as possible. Hence arises the necessity of a direct application to Congress in order to obtain these concessions, which the law could not allow.

Notwithstanding the enormous amounts spent in the large patent interests in lobbying, the impolicy of granting extensions has been rendered so manifest that venality has hitherto had but little weight in the decision of these questions. It is, therefore, only under the guise of ostensible reforms that the patent monopolists can hope to push their schemes forward with success, and we are prepared at any time to hear of attempts to dupe the patent committees into the endorsement of some new-fangled patent bill that will cover up these cases from public gaze until it is too late to stop them.

The SCIENTIFIC AMERICAN has ever been found the uncompromising foe of all such schemes, and our readers may expect to find it now, as heretofore, the true friend of the inventor and patentee, and against the tyranical monopolists who, Cæsar-like, would require tribute of the whole world. From our impartial and peculiar position we can watch these movements about the lobby, and shall sound out a note of warning whenever we notice anything going on likely to impair or infringe the rights of the honest mass of inventors and the public.

### American Lumber Trade—Balancing Saws.

The city of Chicago is the great timber mart of our continent, and the quantity which enters that port is a good indication of the condition of the lumber trade of our country. Last year, the total amount was 273,020,000 feet of lumber, 44,559,000 lath, 127,565,000 shingles. This is stated to be a very great decrease over the receipts of 1857, amounting to no less than 186,618,000 feet of lumber, 35,570,000 lath and 4,267,000 shingles, or more than a half of lumber and more than two-thirds lath. The lumbering business of our country has therefore been in a very depressed condition during 1857; but great hopes are entertained of the present year as being one of much activity in this great branch of American industry. With the return of financial prosperity many mills, now silent on our creeks and rivers, will resound with the song of the humming saw, inspiring the heart of the woodsman with cheerfulness and hope.

In connection with this subject, we have received a letter from a correspondent—E. S. Wicklin, of Illinois—in relation to the trouble which he has experienced in balancing a "muley saw," and as it is an important question, some of our correspondents may give us their experience in the matter. This saw, pitman, jaws, &c., weigh 200 pounds, the stroke is 30 inches, the speed 300 feet per minute. The stroke wheel is 4 feet in diameter, weighs 1,200 pounds, and has a counterbalance of 40 pounds at a point opposite the wrist, at a distance of 20 feet from the center. The timbers upon which the journal boxes are secured are large and well fastened, but are insufficient to withstand the great vibrating action of this machinery.

He says, "there appear to be principles involved in the matter which are not well understood by some of our millwrights; they attempt to balance the *weight* of the reciprocating parts, which must be an error, as the momentum communicated to and taken from these parts, must exert an influence much greater than their mere gravity. The saw running 300 feet per minute, with a stroke of 30 inches, has the reciprocating parts taken from a state of rest to acquire a velocity of 25 feet per second; this is done in the twentieth part of a second, and in the same space of time, this momentum is overcome and the parts brought to rest. If the velocity were given on the descending side, the mere weight of the parts, would only give them a speed of a few inches per second, which action could not overcome the momentum of the last half of the upward motion. Can a weight be placed on any part of the stroke wheel so as to neutralize these forces?"

The difference of momentum between this saw and parts, and the stroke wheel and all its parts, during one revolution is as 1500, to 15,500, pounds. A body falls 30 inches (the descent of the saw) in about 400 of a second. The velocity of this saw is five feet per second, the stroke wheel 12·56 feet at the circumference. The momentum which our correspondent seeks to neutralize is not the point alone to which we direct attention, as it seems that the concussions or vibrations of framing, are caused by the resistance presented to the saw by the log. There are two questions arising from our correspondent's letter to which the attention of operative millwrights is directed, namely, is the stroke wheel, and the saw in this mill, well proportioned in momentum, or is the difficulty in the feed of the log carriage?

### Meteorology.—Our Climate.—No. 1.

Our country possesses a most variable climate; in some sections, the thermometer will range from twenty degrees above zero to twenty below it in the short space of twenty-four hours; and in summer the heat is exceedingly high, while in winter the temperature is severely cold. Such sudden and extreme changes are due to peculiar causes, such as the solar beams, the winds, and special conformations of the earth's surface on our continent. The phenomena of the atmosphere are interesting to every person; these embrace the rolling seasons, the winds, the rain, the summer's heat and winter's cold; and upon these we are dependent for the fruits of the earth, fields covered with luxuriant plenty, or extensive tracks lying desolate in barrenness. We intend to present a few articles on this subject, abstracted from the recent report of Professor J. Henry, Secretary of the Smithsonian Institution, on meteorology as connected with agriculture, which report contains such an amount of condensed useful information, science, and solid reasoning as make it a perfect model in its way. In it the ground is broadly taken that "nearly all the changes which now take place at the surface of the earth are due to the action of the sun. If the solar impulses were suspended, all motion on the surface of the planet would cease, the wind would gradually die away, the currents of the ocean would slacken their pace, and finally come to rest, and silence and death would hold universal reign." We find it stated that the *whole* earth receives the greatest amount of heat during any one day in the year on the 1st of January, and least on the 4th of July, and that in the interior of Australia during January the heat is most terrible in its effects. From astronomical data it is deduced, however, that the point of the earth's orbit which approaches nearest the sun is very slowly, but constantly changing its place in the heavens, and in the course of time the order will be reversed, and the greatest amount of heat received in one day will yet occur in July, and the least in January. In the northern portions of our continent there are fossils of animals and plants belonging to tropical regions, thus proving that at one period in the earths' history the heat of Africa was experienced where the snows of Greenland now cover the face of the ground. In reference to such phenomena Professor Henry says:—"If it be true, as some suppose, that the seasons have changed in different parts of earth within the memory of man, the effect must be due to other than astronomical causes."

As the earth is a sphere, the sun's rays strike it obliquely at all places except those over which it is vertical; therefore the sun's beams diminish in intensity from the equator to the poles. The average temperature of any given place on the globe, if uninfluenced by other conditions, can easily be calculated according to Sir David Brewster, by multiplying its equatorial temperature into the radius of its parallel of latitude. As the sun, however, advances twenty-three degrees north of the equator in summer, it is found that at Madison, Wis., these is more heat received during the three months of midsummer than at New Orleans; but as we advance towards the equator there are less extreme variations of the seasons. The great amount of heat received during summer so far to the north, accounts for the great variety of fruits and grain which can be cultivated in such latitudes.

The atmosphere is a great equalizer of heat during day and night at the earth's surface. Were it not for the atmosphere, all parts of the earth's surface would probably become as cold at night by radiation of heat into space as the polar regions are during the six months absence of the sun. The mode in which our atmosphere retains its heat and increases the temperature at the earth's surface was illustrated by the physicist Saussure. He lined a box with blackened cork, placed a thermometer in it, and covered it closely with a top of two panes of glass, separated from one another by a thin stratum of air. When this box was exposed to the perpendicular rays of the sun, the thermometer in it indicated a temperature above that of boiling water. Sir John Herschel repeated this experiment at the Cape of Good Hope, and was able thus to cook a festive dinner. This phenomenon is due to the rays of different quality which are given off by a body heated to different degrees of intensity. Thus, if an iron ball be suspended in free space and heated to the temperature of boiling water, it emits rays of dark heat which have very little penetrating power, and are intercepted by glass. But as the body is heated still higher, the penetrating power of the rays increases, and finally, when the ball becomes of a glowing white heat, the rays readily penetrate through glass and all other transparent substances. The heat which comes from the sun consists principally of rays of high intensity and great penetrating power. They very readily pass through glass, are absorbed by the blackened surface of the cork, and as it is a bad conductor, its temperature is soon elevated, but the rays which it gives off are of a different character from those which it receives. They are non-luminous, are of feeble penetrating power, cannot pass through the glass, and they therefore soon elevate the temperature of the air in the box. The atmosphere which surrounds the earth produces a similar effect. It transmits rays from the sun and heats the earth beneath, which in its turn—like the blackened cork—emits rays which do not readily penetrate the air, but give rise to an accumulation of heat at the earth's surface. The radiation of heat from the earth differs much on different nights. If the atmosphere is dry it radiates rapidly at night, but in moist situations it radiates slowly, hence during warm damp days the heat is always oppressive; and the sensation of heat is felt to be as intense in moist countries, such as England at a temperature of 76°, as in New York at a temperature of 86°. Col. Emory, in his report of the Mexican boundary survey, states that on the arid plains there was a difference of 60° between the heat of the day and the night.

### Composition for Black Lead Pencils.

R. Hicks, of Chatham Place, London, has patented a new composition for pencils, consisting of two parts of black schist, two of carburet of iron and eight parts of the plumbago of commerce. They are first reduced to fine powder, mixed with a very small quantity of water, then placed in a strong metal mold, and submitted to severe pressure in a hydraulic press. They are thus rendered like a block of solid metal, and are fit to be sawn out into minute slabs for pencils. This composition also makes excellent crucibles for melting metals.

### To Inventors and Patentees.—Removal.

In a few days we expect to remove our offices to the spacious building erected on the site of the old Brick Church, opposite the City Hall Park. It is not our intention to remove all the effects which have been accumulating in the offices we now occupy, since 1846, and we would thank inventors and patentees, if we have any models or Letters Patent which they wish to preserve, to order them away immediately. In sending for models, please to state what invention they represent and when they were left at our office, and how they are to be returned, and we will see that they are boxed and sent to the express office, free of charge. We have over 90 patents in our possession, which belong to parties located in every part of the country, and many hundreds of models which are, no doubt, of some value to their owners, but are of no value to us, and they occupy the space which we need for new models which are daily coming in.

QUEEN VICTORIA'S SKATES.—In lieu of straps across the instep, each skate is provided with a patent leather boot. These boots are firmly attached by a strip of plated silver to the clogs, which are of satin wood, highly polished. The skate-irons terminate in front in the appropriate and graceful form of a swan, and both sides are elegantly chased. The cup that forms the receptacle for the heels is silver-plated, and chased with the design of a rose, shamrock and thistle. The same design is embroidered in white silk upon the black patent leather, to which it forms pleasing contrast. The skate here described is similar in make to what has been shown to us two or three times this winter, and upon which parties have been anxious to get patents.

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### The Winans' Steamer.

MESSRS. EDITORS—In a communication from me, an extract of which was published in your paper a few weeks since, you evidently mistook my meaning as regards the concentrated strains in vessels; therefore I trust you will allow me a short space in the columns of your journal, in order that its many patrons and readers may properly understand the position I take as regards the construction of vessels upon the cigar or spindle principle. In the communication alluded to, the idea I meant to convey was, that the spindle had this advantage over the cylinder, that an exact calculation could be made as to where the strain would fall, let the force or blow come from any direction, and strike on any point in its form. In a cylinder this could not be done, for the simple reason that each transverse diameter of the cylinder when in a state of rest, in smooth or still water, sustains an equal strain, but poise it upon the pinnacle of a wave on (say) its center diameter, and this equality is destroyed, the strains concentrating over the point of intersection, it would receive but little support from its adjacent diameters. In the spindle it is the reverse of this, for if it be poised on its greatest diameter, each and every diameter to its extremities would receive its due proportion of strain.

J. W. NORCROSS.

Cicero, N. Y., January, 1859.

[The above is only part of the letter which our correspondent has sent us. It is an explanation of his views in reference to the focus of strain in this steamer. The part which we have omitted is in advocacy of the stability of the spindle form. As we have given the views of the Messrs. Winans' on this point nothing further is necessary, especially as the vessel itself will soon prove who are right and who wrong in their calculations. In suspending discussion on this subject for the present, we must emphatically say that we cannot conceive of a worse possible form of a steamer for sea-going purposes. The load water-line will differ with every inch of immersion, and if she draws over eight feet, her horizontal lines will be somewhat bluff, her nose will be continually under water, and she will be in danger of being buried under the waves in crossing the Atlantic.

We learn from the Baltimore *Sun* of the 21 ult., that this steamer has made a short trial trip in smooth water, and it is stated that it made about twelve miles per hour, but that the whole power of the engines was not applied. From the published account we have not been able to learn any of the particulars of the vessels' performance, except that it was very lightly loaded, drew only about six feet of water, and that good ventilation was obtained.—EDS.

### The Cigar-shaped Steamer Adapted for War.

MESSRS. EDITORS—In the various comments, *pro* and *con*, that have appeared in your valued journal respecting the Messrs. Winans' new steamer, I have noticed no hint of one use (whether it was ever so intended by the makers or not, I am unable to state); I refer to the possibility of making such a vessel a means of naval defense, by attacking and sinking an enemy's ships. No one has contested that in smooth water, and with engines of such immense power as hers are (relatively), compared with her size, that she could move forward with tremendous force and swiftness. The sharp-pointed prow, armed with solid iron or steel, would glide through the waves just below the water-line of a vessel. From her circular construction, such a steamship could be made almost ball-proof; but her efficiency would be in her swift movements, and the awfulness of the surprise and danger to the party attacked. Imagine a war between this country and France, and the port of Baltimore blockaded by a large fleet of frigates: the time 2 o'clock A. M., on a dark morning. Suddenly the watch on the outside frigate hears a most energetic snorting, which rapidly approaches. He little heeds it at first, supposing it to be merely a ferry-boat, but the alarm becomes general when an attacking vessel rushes like a tornado on the enemy; she strikes, and makes a hole as large as a hogshead. What consternation, as the frigate rapidly fills and sinks! No idea would arise of pursuing the little wasp that had stung the lion fatally; self-preservation would be the only thought, and probably few on board a ship so attacked would survive. The said little wasp, rapidly backing off, could attack and sink a dozen vessels in an hour, the crews of which would be paralized with fear, at the terrible energy of the attack, and the imminent risk of all their lives at once.

I therefore regard the invention as of great importance in this view, and it should be secured, if possible, to our country. With such vessels known to be ready on our coast, no hostile fleet would dare to anchor in one of our harbors; and the crew of every enemy's vessel anywhere near our coast would be in constant trepidation of being sunk in a moment—even perhaps in broad daylight—by one of these horrid little black "punches" with smoke-pipes. S. H. N.

Philadelphia, January, 1859.

### Defects of Gutta Percha.

MESSRS. EDITORS—I have observed that gutta percha, when used as a covering for submerged wires, becomes, after a time, quite brittle; it is then liable to crack open, as if cut across with a knife, when bent or made to take a short turn. This difficulty is not obviated by the use of several coatings, as they adhere so closely together that a crack will extend through them all to the conducting wire. An ocean cable, however carefully paid out, is pretty sure, while passing over an uneven or precipitous bottom, in deep water, or through strong under currents, to get "kinked" occasionally. If the gutta percha covering does not, in such cases, open at once, and thus very much injure or entirely destroy the insulation, it would seem likely, from continued tension, to do so sooner or later. I would suggest as a remedy for this apparent defect in the present mode of insulating submarine cables, the employment of a combined covering of gutta percha and hemp, or other fibrous substance, in alternate layers—first, a coating of gutta percha, over this a thin coat of hemp saturated with boiling pitch, then a second coat of gutta percha, another of hemp, and a third of gutta percha; outside of this a wire or hemp covering, or one of both, twisted or braided, as has been used, or proposed by others, could, of course, be placed. The layers of gutta percha being thus separated, a crack through one would not affect the other. A cable so constructed would also seem less likely to receive serious injury from any of the various forms of mechanical violence to which it must necessarily be subjected. I. H. NORRIS.

White River Junction, Vt., 1859.

[The information of our correspondent concerning the defects of gutta percha is very useful. The insulating covering which he proposes is similar, if we recollect clearly, to that of the cable which crosses the Ohio river, and which was laid down several years ago under the direction of T. P. Shaffner, Esq.—EDS.

### Tanning.

H. Lees, of Salford, England, has taken out a patent for tanning hides by first steeping them in a thin solution of mineral tar, and afterwards in another of alum. This process may effect, as it is stated, the rapid tanning of hides, but unless some substance is also employed to remove the smell of the tar, no person would use such leather.

IT has been estimated that England pays three millions of dollars annually for manure.

### Ships of War.

A very interesting paper was recently read on "The Ships of the Royal Navy," before the the Society of Arts, in London, by E. J. Reed. From it we learn that until very recently the ships in the British navy were inferior in model and build to those of every other nation, and that vessels captured from France, were, for many years, English models. Since the introduction of steam, great improvements have been made in every department, and the ships of the present navy of Great Britain are as different to those in vogue forty years ago as horses are to donkeys. They have now a fleet of screw steamers, consisting of fifty-one line-of-battle-ships, each armed with eight-inch shell guns and 32-pounder solid shot, together with one and sometimes two 68-pounders. There are also nine block-ships, armed with eight-inch shell guns and 68 and 32-pounders, and four ten-inch guns to each. There are also twenty-eight frigates, powerfully armed, besides thirteen corvettes carrying each two eight-inch shell guns and one 68-pounder or one ten-inch shell gun. There are four mortar frigates, carrying thirteen-inch mortars and 68-pounders, eight floating batteries armed with 68-pounders, twenty-seven sloops, with 32-pounders, twenty-six gun-vessels with 68 and 32-pounders, and 163 gun-boats, each carrying one 68 and one 32-pounder—in all 331 steam vessels. A comparison is made between American ships and those of England, and it is admitted that the *Merrimac* and those large steam-frigates lately built are equal to the best frigates in the British navy; still, it is maintained that the engine-power of the latter is superior to that in American war vessels, which gives them a great advantage.

A very great change has taken place in regard to the size of ships, the frigates of the present day are of one-fourth greater in tunnage than the largest line-of-battle-ships of fifty years ago. In the British navy, at the present time, there 607 fighting ships of all classes of an aggregate burden of 665,220 tuns, with a steam power equal to that of 100,000 horses, and involving a cost of about $140,000,000. There is incessant activity displayed in all the dock-yards, and the utmost attention is now being paid to the construction of powerful rifled breech-loading cannon.

In the paper read by Mr. Reed on this subject, he states that Capt. Ericsson, of this city, in 1837, made a very favorable run down the Thames river with his screw propeller having the Lords of the Admiralty on board, and "that notwithstanding the success of this experiment and the manifest advantage of a submerged propeller for a ship of war, the chief of the Admiralty Board made no sign in favor of the new propelling instrument. Capt. Ericsson therefore took it to the United States, where it was soon afterwards introduced into the American navy." It was not until 1845 that the screw propeller was introduced into the British navy, and such has been its success since then, that every vessel now built for that navy is a screw steamer—the paddle-wheel having been entirely superseded by it. The least thing which the British authorities can do, in consideration of what Capt. Ericsson has done for their navy, by arousing public attention to this superior propelling device, is to render him a respectable equivalent for the benefits derived from his services. This suggestion is made as a question of public justice, as we understand that Smith & Woodcroft—subsequent inventors—have both been rewarded by the British government.

CHARLES BONELLI, the well-known electrician and director of telegraphs at Turin, is at present engaged in a vast project for connecting Genoa with Buenos Ayres by means of an electric cable. This plan possesses an advantage over the Atlantic cable between Valentia and Newfoundland, as it is divisible into various sections not exceeding 900 miles, while the Valentia cable measures 3,000.

*** PERSONS who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

TO CORRESPONDENTS.—We are happy to have secured so large a share of the public confidence in our opinions, as shown in the voluminous correspondence which we are able to carry on by mail, and through this column. On one day, during this month, we received no less than 180 letters, and so complete is our system that scarcely one of them remained two days unattended to. We are always pleased to give our friends all possible attention, but we beg to be spared the trouble of reading letters about the power of onion juice on the eye, price of pop-corn, apple-sauce, geese, prairie-chickens, etc.

M. L., of Mass.—You never can obtain a steady motive power of any consequence from the currents in tall hollow shafts or chimneys. The force of the current would be due to the small difference of temperature between the upper and lower strata of air.

E. S. S., of Mo.—To imitate rose by staining whitewood, use a strong solution of redwood and fustic for the first coat, and on the top of this a strong solution of logwood in grain streaks. Furniture varnish is made by dissolving 5 lbs. of shellac and 7 ounces of mastic in 6 pints of cold alcohol.

A. J. S., of Min.—A cement for mending articles of cast iron consists of fine clean iron turnings mixed with a small quantity of sal-ammoniac and some flour of sulphur made into a paste with a little water. Fine powdered plaster of Paris made into a creamy consistency with water is used as a cement for marble.

W. H. S., of Miss.—We do not know where you can get a good work on acoustics as applied to buildings.

J. McM., of Ill.—Write to Messrs. Hoe & Co., this city, and state what size of cord wood you intend to cut, and they will inform you what size of circular saw is best for the purpose, and the price of it.

D. M. C., of Ala.—We are not acquainted with a single good work on "common oil painting."

C. H. B., of Mass.—A strong solution of glue cannot be kept in a liquid state without heat. If alcohol were a solvent, it would prevent it from freezing, but it is a precipitant. By heating and cooling a solution of glue four or five times in succession, it does not congeal so readily afterwards.

M. C., of Vt.—The extract of oak or hemlock bark is as good a substance as you can use for the removal of incrustations in boilers. If you cannot obtain this, use common molasses.

J. G. B., of Mich.—We have seen a Smee's battery with only six square inches platina to sixty of zinc; eight square inches of negative metal will answer for sixty-four of the positive.

D. S., of Pa.—The application of an old device to a new purpose is not a patentable feature. Blanchard's lathe was originally patented as a machine for turning gun stocks, but it is now used in the turning of busts, axe-helves, &c. A patentee can use his machine for any purpose.

H. E. Y., of Mo.—A patent could not be obtained for building a saw-mill on a boat or other floating device. On the upper Rhine, in Germany, we have seen grinding mills so constructed; and have had models of sawing mills so arranged sent us. No patent could be obtained for such a device.

O. C. J., of Ill.—There is no encyclopedia of arts and sciences now in the course of publication in our country. It will do you no harm to accept the calculation of the comet's velocity, on the page referred to, as correct. We could not advise you to swallow anything above that estimate, for we think the comet speculations are coming it pretty strong as it is.

J. B. P., of Pa., proposes the following profound enquiries for scientific analysis: First, "Why is it that in a glass lamp with a smooth surface, warm lard or other congealable liquids, will thicken soonest on the side of the lamp that is towards a fire?' Referred to some of our Cincinnati friends, who are familiar with all the eccentricities of pork and lard. Second, "Why a small piece of steel, such as a darning needle, one end being placed between the teeth while preparing onions for the table, will protect the eyes, and render the preparing of onions as harmless as that of potatoes?" Referred to the Onion-grower's Association, of Weathersfield, Conn., to report on at its next sitting.

J. C. K., of Ark.—It is a mere superstition to suppose that quicksilver thrown into the creek would cause the rocks to explode on which your dam is built. The water found access through some fissure in the limestone rock and thus tore up the foundation of the dam.

H. L. E., of Mass.—We thank you for your note of the 17th. Should be pleased to hear from you often. Shall soon publish some additional useful information about girders.

A QUESTION FOR SOLUTION.—A correspondent inquires, "Suppose a man and a girl were to get married the man is 35 years old, and the girl 5 years, this makes the man seven times as old as the girl, and they live together until the girl is ten years old, this makes the man forty years old, and four times as old as the girl, and they still live until she is fifteen, the man would be forty-five, this makes the man three times as old, and they still live on till the girl is thirty years old, this makes the man sixty, only twice as old, and so on. Now, how long would they have to live to make the girl as old as the man, at the same rate of reasoning." We would refer him, for the solution, to some of those mathematical students who are endeavoring to square the circle or discover perpetual motion.

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B. M., of Ala.—Your demonstration of "Pythagoras' problem" is very simple; but mathematical problems are treated so extensively in special works that it would not be beneficial for us to use space for their consideration.

S. L., Son & Co., of London.—We could not supply all the numbers of the SCI. AM, from January, 1858, for Mr. Kirbergar, therefore we commence his subscription with Vol. 14. Can send him Vol. 13 (September, '57, to September, '58), bound, if you wish.

W. R., of N. Y.—Tuning-forks are pitched to certain keys by filing them near the points inside of the crotch to sharpen them, and near the end of the crotch to render them flat. You are mistaken in supposing they are tuned in the tempering process.

S. K., of Kentucky, and A. R., of Texas. —A correspondent, referring to our answer to your enquiry, on page 154, informs us that he has a work in his library, which bears the following title, "Essays on the Theory and Practice of the Art of War; including the duties of officers on actual service, and the principles of modern tactics: chiefly translated from the best French and German writers. In 3 vols. London, 1809. By T. Gillet, Crown Court." It is possible that you may be able to get the work through some bookseller. Under the head of "Development of Cylindrical and Conical Surfaces," Mahan's Industrial Drawing Book will afford the information wanted in relation to patterns for tinsmiths.

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Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, January 22 :—

J. E., of Conn., $40; J. M., of Pa., $30; G. W. L., of Ind., $30; J. N. D., of Ky., $55; A. S. B., of Conn., $60; J. R., of Pa., $30; J. E. A., of Conn., $25; J. M. M., of N. Y., $30; W. P., of Ohio, $25; C. C. G., of Ala., $25; J. R. & H. M. B., of N. Y., $10; J. P. F., of N. Y., $35; H. H. L., of Ill., $30; G. A. L., of N. Y., $55; N. T., of Conn., $25; W. S. K., of Conn., $30; W. G. & J. B. R., of Pa., $30; P. H., of N. Y., $35; E. T. L., of Ala., $20; B. H. H., of R. I., $25; T. P., of N. Y., $10; J. M., of Pa., $275; J. T., of N. Y., $15; L. M., of N. Y., $30; C. W. W., of N. Y., $30: J. J. C., of Mo., $20; E. O. B., of Ill., $30; H. B., of Va., $25; W. C. D., of Mass., $25; J. H. F., of Ill., $25; A. C., of N. Y., $50; M. A. K., of N. Y., $30; L. & B., of R. I., $25; M. & D., of N. Y., $30; H. N. DeG., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, January 22 :—

M. & D., of N. Y.; S. Y., of R. I.; H. N. DeG., of N. Y.; J. J. D., of N. Y.; J. E. A., of Conn.; C. C. G., of Ala.; I. T., of R. I.; L. & B., of R. I.; S. S. B., of R. I.; C. W. R., of Vt.; J. W. P., of N. Y.; H. B., of Va. (two cases); P. P., of N. Y.; W. P., of Ohio; J. T., of N. Y., J. E. H., of Ohio; J. E., of Conn.; N. T., of Conn.; J. L. P., of N. Y.; W. C. D., of Mass.; J. H. F., of Ill.; J. E. R., of N. Y.; L. M. W., of N. Y.; J. P. F., of N. Y.

## A WORD TO OUR PATRONS.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona fide* acknowledgment of the receipt of their funds. The Post Office law does not allow publishers to enclose receipts in the paper.

WILL OUR FRIENDS FAVOR US?—Any of our readers who do not preserve files of our paper for binding (we hope there are but few such), and who have Nos. 4 and 5 of the present volume which they are willing to spare, will oblige the publishers by sending said numbers to this office. Ten cents for each copy will be paid.

## Literary Notices.

THE RHODE ISLAND SCHOOLMASTER. Edited and published by W. A. Mowry, Providence. The first number of the fifth volume of this periodical is just issued, and it is full of excellent articles on various educational subjects, the best being one on education at the Sandwich Islands.

THE DEMOCRATIC AGE. January, 1859. No. 41 Park Row, New York. This able periodical is rapidly gaining ground, and contains good articles on "The Early Painters of America," "Machiavelli," &c, besides many others too numerous to mention and too good to criticise.

THE SCALPEL. January. Sherman & Co., 1 Vesey street, New York. Dr. Dixon is as lively as ever, and uses his scalpel, this quarter, with less severity than usual. He eulogizes Dr. O. W. Holmes, suggests that Old Cheops was president of a medical college and that the pyramids were his dissecting rooms, and many other queer ideas worth reading. The Scalpel is, however, the best popular medical periodical we have; whether it be newly sharpened as at present, or when the edge gets rather worn and it pains as it cuts.

JOURNAL OF MATERIA MEDICA. January. Tilden & Co., New Lebanon, N. Y. This periodical contains plenty of reading matter on general topics of medical interest, and a good share of information on Tilden & Co.'s extracts, to the explanation of the virtues of which the rest is secondary.

THE DENTAL NEWSLETTER. January. Jones, White & McCurdy, 335 Broadway, New York. A good periodical that should be taken by every dentist.

BLACKWOOD'S MAGAZINE. Leonard Scott & Co, 54 Gold street, New York. The number for this month of this, the most able of all the European monthlies, commences a new volume, and it affords an excellent opportunity for subscribers to renew their subscriptions. It numbers among its contributors the ablest literary men in Great Britain, such as Bulwer, Dr. Warren, Prof. Aytoun, and other men of like genius. "What Will He Do With It?"—Bulwer's last—is completed in this issue.

KENNY'S MANUAL OF CHESS. D. Appleton & Co., Broadway, New York. This is a condensation of all that is necessary to make a perfect chess-player. It may, indeed, be called the chess-player's *vade-mecum*.

AMERICAN FARMERS' MAGAZINE. J. A. Nash, editor and publisher, 7 Beekman street, New York. This, the first number of a new volume, contains, as usual, much excellent matter of interest and importance to agriculturists, and as the price is only one dollar a year, it should be in the hands of every farmer in the land.


## IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 128 Fulton street, New York. We established, over a year ago, a Branch Office in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents :—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly. CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY, No. 128 Fulton street, New York.

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CROSSETT'S PATENT STAVE CUTTER—Patented July 1, 1844; re-issued March 2, 1858; renewed and extended June 26, 1858. The above-mentioned machine is warranted to cut more and better staves than any other machine in the United States, and is the most simple, cheap, and durable. I hereby caution all persons against using and vending said machine (the main features of which consist in the stationary knife and vibratory bed-piece) without the legal right to do so. Offenders will be dealt with according to law. All persons wishing an interest in the extended term of said patent can obtain it by addressing the undersigned at Joliet, Ill.

21 7* GEO. I. CROSSETT, Assignee.

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THIRD VOLUME OF MARIE LOUISE HANKINS and Fannie Lucele's LITERARY GAZETTE—the largest and handsomest magazine for 1859. Best writers, fashions, engravings, and patterns. 24 colored steel plates and 24 sheets of music (each a foot square) during the year. Tinted covers and fine paper. Subscription, $2—and a book, music, or jewelry, worth $1, given beside the magazine. Clubs get books, music, or jewelry extra to the full amount of the money they send. Enclose four 3-cent stamps for catalogues to select from, and specimen copy to examine. Agents paid well everywhere. Address, MARIE LOUISE HANKINS & CO., office of "Daily Museum," Appleton's Building, New York.

"The Ex-Governor's Will," a great original novel, by Marie Louise Hankins, commences with the volume.

21 2*

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GREAT CURIOSITY—PARTICULARS FREE. Agents wanted. SHAW & CLARK, 21 4* Biddeford, Me.

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THE WILLCOX & GIBBS' REVOLVING Looper Sewing Machine (illustrated in SCI. AM., Vol. 14, No. 21), is manufactured and for sale by JAS. WILLCOX, No. 715 Chestnut st., Philadelphia. This machine more fully meets the requirements of families than any heretofore produced, being at once simple, the workmanship perfect, and hence reliable. Competent agents are wanted. 21 4

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STEAM GAGES—MAXIMUM HAND. E. H. ASHCROFT, 14 Beverly st., Boston, Mass. 21 4

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FOR SALE—VOL. 1, MECHANIC'S JOURNAL, Vols. 3, 4, 5, 6, 7, 8, SCIENTIFIC AMERICAN, bound, and Vols. 9, 12, 13, in sheets, two numbers missing. Price, $20. F. S. BROWN, 1* No. 108 Norfolk st., New York.

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SUN GAS BURNER—THIS BURNER HAS been selected as the best, and is now exclusively used for street-lighting by the cities of Boston, Worcester, Nashua, Providence, and other places. SUN GAS BURNER COMPANY, 21 4 No. 14 Beverly st., Boston, Mass.

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PAGE'S PERPETUAL LIME KILN—PATented 1854, 1857, and 1859—will burn 100 barrels of lime every 24 hours, with three cords of wood, or 1½ tuns of coal, not mixed with lime rock. Will burn every variety of lime rock, marl, or shells. Rights for sale. C. D. PAGE, 21 8* Rochester, N. Y.

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COTTON-OPENERS AND CLEANERS—Kitson's latest improved Cotton-openers, which were introduced September, 1857, have been adopted by the following companies, of Lowell, Mass.: Suffolk, Lawrence, Tremont, Appleton, and Prescott Corporations; and the Pacific Co., Lawrence, Mass.; Cocheco Co., Dover, N. H.; Salmon Falls Co., Salmon Falls, N. H.; Ogden Mills, Cohoes, N. Y., and other places. For price and other particulars enquire of RICHARD KITSON, Lowell, Mass. 21 5*

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ATHENS FOUNDRY AND MACHINE Works want a Pattern-maker of steady habits, a knowledge and experience in gearing, mill-work, and general repairs, and construction of working drawings required. One that would take an interest in the works preferred. Also a blacksmith to take charge of and do the forging. Address, REUBEN NICKERSON, Agent, Athens, Ga. 21 2*

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WARREN'S TURBINE WATER WHEEL—Improved and patented by A. Warren and E. Damon, Jr. The vast number of these wheels now in operation, and the invariable success attending them, is the best evidence of their advantages over ordinary wheels in the economy of water power. The American Water Wheel Co. will send to applicants (enclosing two stamps) their pamphlet, containing engravings of turbines and a treatise on hydraulics. Address, A. WARREN, Agent, No. 31 Exchange st., Boston, Mass. 21 12*

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FOUNDRY FACINGS OF EVERY KIND—Lehigh, per barrel, $2 50; sea coal, $1 75; charcoal, $2 25; soapstone, $1 75; clay, sand, and kaolin, $1; leads, 2 to 8cts. L. A. ORCUTT, 21 5*e4w Albany, N. Y.

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FOR SALE—AT A BARGAIN FOR CASH, ONE new iron planer, which will plane 13 feet in length, 38 inches in width, and 36 inches in hight; weight, 10,000 lbs. Address WM. T. SCRANTON, New Haven, Conn. 20 4*

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A. L. ARCHAMBAULT'S PORTABLE ENgines on wheels, (introduced July, 1849,) for hoisting, pumping, driving ore washers, circular and up and down saw-mills, thrashing machines, cotton gins; also connected to country grist mills, to assist water power, or to work without the assistance of the water as the case may be. Descriptive circulars on hand. Address A. L. ARCHAMBAULT, Fifteenth and Hamilton streets, Philadelphia. P. S.—Orders filled in two to three weeks. 20 4*

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JUST PUBLISHED—"ENGINEERING PRECedents for Steam Machinery," embracing the performances of steamships, experiments with propelling instruments, condensers, boilers, &c., accompanied by analyses of the same, the whole being original matter, and arranged in the most practical and useful manner for engineers. By B. F. Isherwood, Chief Engineer, U. S. Navy. 8vo, 127 pp. Sent free on receipt of the price, $1 25. H. BAILLIERE, 1* No. 290 Broadway, New York.

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A CLEAR, STEADY, AND DIFFUSIVE light from illuminating gas, with a saving of 15 to 30 per cent, is secured by the Patent Lever Gas Regulator—patented June 22, 1858. This regulator is the simplest and cheapest; and its uniform success wherever applied during the past 18 months, proves it to be the best ever offered to the public. Persons desiring to introduce a well-tried article will find this one a prolific source of profit, requiring a very small capital. Town, city and State rights for sale. Address JOHN H. COOPER, Patentee and Sole Manufacturer, No. 866 North Sixth st., Philadelphia, Pa. 21 4*

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STEAM BOILER EXPLOSIONS—LOW Water Detectors. The surest indicators of danger from low water in steam boilers. E. H. ASHCROFT, 21 4 No. 14 Beverly st., Boston. Mass.

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FRANCIS J. HOLLENWEGER—PATTERN and Model Maker, 216 William st., New York. 1*

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GROVER & BAKER'S CELEBRATED Family Sewing Machines—495 Broadway, New York; 18 Summer st., Boston; 730 Chestnut st., Philadelphia; 137 Baltimore st., Baltimore; 58 West Fourth st., Cincinnati. A new style—price $50. This machine sews from two spools, as purchased from the store, requiring no re-winding of thread. It hems, fells, gathers and stitches in a superior style, finishing each seam by its own operation, without recourse to the hand-needle, as is required by other machines. It will do better and cheaper sewing than a seamstress can, even if she works for one cent an hour. ☞ Send for a circular. 19 13

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WROUGHT IRON PIPE FROM ⅛ OF AN inch to six inches bore; Galvanized Iron Pipe (a substitute for lead), Steam Whistles, Stop Valves and Cocks, and a great variety of fittings and fixtures for steam, gas, and water, sold at wholesale and retail. Store and Manufactory 76 John, and 29, 31 and 33 Platt st., New York. JAMES O. MORSE & CO. 18 13

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PORTABLE STEAM ENGINES.—S. C. HILLS, 12 Platt street, New York, offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store; it occupies a space 5 by 3 feet; weight, 1,500 lbs.; price, $250. Other sizes in proportion. 2 e3w

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WATER WHEELS—BALDWIN'S "UNIVERSAL TURBINE" gives better satisfaction than any other water wheel, the overshot not excepted. It gives a higher percentage, with a partially raised gate, than any other. It gives from 75 to 97 per cent, according to the size of wheel and head applied. When you purchase a water wheel, my friends, get the best, if you would save money, as the best is always cheapest in the end, and you will have to make no changes. For further information address, S. K. BALDWIN, Laconia, N. H.

"We have examined a model and drawings of the 'Universal Turbine,' and believe it to be a scientific water wheel, and one calculated to give the greatest amount of power from a limited quantity of water."—Munn & Co. 18 13*

"They are without a rival."—Scientific American.

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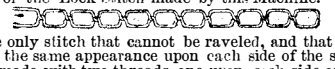

is the only stitch that cannot be raveled, and that presents the same appearance upon each side of the seam. It is made with two threads, one upon each side of the fabric, and interlocked in the center of it. Send for a circular. 6 tf

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THE NEW BRICK MACHINE IS RECeived with favor in all parts of the Union. The rough clay being saturated, is left to soak all night, then shoveled into the machine, by which it is tempered and molded into beautiful bricks—all done by common laborers. The hand machine, worked by one man—brick of usual size—making 4,000 per day, $70. A larger size, worked by a mule, mold 12 by 6 by 3, for the West Indies, $80 One-horse machine, 7,000 per day, $150. Two-horse, 14,000, $200. By steam, 25,000, $400. For further particulars, in a pamphlet giving full instructions on brick-setting and burning, address FRANCIS H. SMITH, Baltimore, Md. 20 eow 2*

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HOYT BROTHERS, MANUFACTURERS OF patent-stretched, patent-riveted, patent-jointed, Oak-Leather Belting; Store, 28 and 30 Spruce street. Manufactory, 210, 212, 214 and 216 Eldridge st., New York. A "Treatise on Machinery Belting" is furnished on application, by mail or otherwise—gratis. 16 12*

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A MESSIEURS LES INVENTEURS—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence. MUNN & CO. Scientific American Office, 128 Fulton Street, New York.

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## Zur Beachtung für Erfinder.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an

Munn & Co.,
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Auf der Office wird deutsch gesprochen.

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WATER POWER AND MILL SITE FOR SALE—The Society for Establishing Useful Manufactures at Paterson, N. J., propose to lease for 21 years, renewable for ever, a mill lot with six feet of water, to be taken from the first or upper canal, and discharged into the second or middle canal. The head and fall is about 24 feet. The mill lot is well adapted for any manufacturing business. This property is ready to enter on—is at Paterson, and convenient to the city of New York, with railroad and canal conveyance, in the heart of a large manufacturing population, and all the advantages incident to such a locality. For particulars apply at the office of the Society, Paterson, N. J. 17 6*

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CORLISS' PATENT STEAM ENGINES—On application, pamphlets will be sent by mail containing statements from responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. (The "James' Steam Mills," Newburyport, Mass., paid $19,734 22, as the amount saved in fuel during five years. The cash price for the new engine and boilers was but $10,500.) These engines give a perfectly uniform motion under all possible variations of resistance. Two hundred and fifty, varying from about 20 to 500-horse power, are now in operation. Boilers, shafting, and gearing. CORLISS STEAM ENGINE CO., 15 26* Providence, R. I.

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HOWE'S WEIGHING SCALES—STRONG & ROSS' PATENT. Having received first-class premiums from the Vermont State Fair, New York State Fair, Virginia State Central Fair, United States Fair, Virginia State Fair, and Franklin Institute Fair, within sixty days, we have now only to invite the public to examine our large stock of scales of every variety, and also to test the principle of a six-ton scale, set up on the floor of our store, as well as to examine certificates of their superiority from many of our leading houses. FRANK E. HOWE, No. 438 Broome st., first door from Broadway, New York. 13 13* JOHN HOWE, JR., Brandon, Vt.

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# Science and Art.

### New Propeller for Canals.

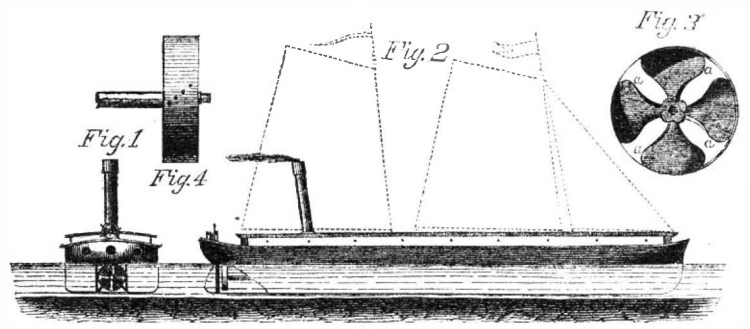
The continual annoyance and great expense attending the use of animal power on canals in the transportation of freight, together with the low rate of speed thus obtained, have led to many attempts to employ steam as a superior and more economical substitute. On canals of very moderate depth (such as the New York and Erie), these experiments, we understand, have not led to such favorable results as many persons anticipated. We therefore feel assured that the importance of the subject will secure a candid examination of any improvement or plan which has for its object the removal of any difficulties which stand in the way of entire success in this system of public transport. In proceeding with this description, the obstacles to full success in canal navigation will be first pointed out. The first is, improperly modeled boats, which have caused too great a swell in the water, even at comparatively low speeds; a second is, the great bulk, weight, and expense for boilers and machinery, and fuel to run them; a third is, injury to the banks of the canal by the waves, when a high speed has been attempted; fourth, frequent breakage of the exposed propeller blades by striking against the banks, and other objects, also by becoming entangled with tow lines. These difficulties are designed to be removed by Montgomery's "Archimedean Steam Canal-boat," represented by the accompanying figures, embracing an end view (Fig. 1) of the boat, a side view, Fig. 2, and a transverse and edge view of the propeller, Figs. 3 and 4. The boiler represented and described on page 129, present volume of the SCIENTIFIC AMERICAN, is used on this vessel, but does not require to be further alluded to here.

By reference to the engravings it will be observed that the propeller has four blades, *a a*, but any number may be used. These have the form of portions of exact screws or helices, and they are surrounded with a cylindrical case, to which they are secured. This case increases the strength of the propeller to such a degree that a considerable reduction of its weight in comparison with the common propeller may be effected. It also secures the blades from striking objects and becoming entangled, thereby protecting it from breakage. It also makes the water leave the blades in a direction parallel to the shaft instead of being thrown off violently at the sides, and it is believed that a considerable saving of the power is thereby attained.

The model of the boat is peculiar, and the stem and bottom are bifurcated. The stem is what may be called "swallow-tailed," having an opening beneath equal in hight and breadth to the propeller, which rotates freely within it, and which is thus secured from collision or contact with objects. This opening continues forward, equal in breadth, but diminishing in depth, until it meets the flat bottom of the boat at the *stem* forward.

As in passing through the canal the boat must displace a certain quantity of water, the swell or wave which is generated thereby instead of moving along the sides, and injuring the banks, is intended to pass beneath the boat into the channel or space described, and flow to the propeller in one unbroken current instead of two, as usual—one at each side. By this means it is believed that the screw will have a more undisturbed medium to act upon, and thereby operate more effectively. There are also two rudders on this boat (one at each side of the propeller opening), both managed with the one steering wheel, and always parallel to each other, to steer the boat in a more perfect manner, and also serve to deflect the current passing from the propeller, so as to assist in directing the vessel also. These remarks are sufficient to point out the original character of these inventions, and the objects they are designed to accomplish. The figures represent a boat embracing all the improvements mentioned, as adapted to the enlarged Erie Canal. It is on a scale for one 95 feet long, 17½ feet wide, and drawing six feet of water. The space required for machinery, boilers, &c., is about equal to that used for horses on those boats which carry their own teams. A pamphlet has been issued on the subject, in which it is

## MONTGOMERY'S PROPELLERS FOR CANALS.

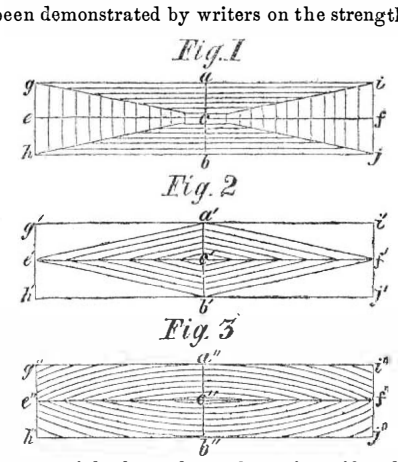



stated that about two tuns of coal only are required to be put in as fuel, for a trip. Mr. Montgomery's boat is also designed for the lakes and rivers as well as for canals, so as to run through at a good speed without reshipment of cargo, from the time it is put on board on the upper lakes until it arrives at New York.

More information and particulars may be obtained by addressing David Thomson, No. 90 Beaver st., or James Montgomery, No. 4 Bowling Green, New York.

### Iron Girders and Beams.

MESSRS. EDITORS—I have read with much interest the articles in the SCIENTIFIC AMERICAN by Mr. B. Severson on the form for iron girders, and agree with him in some important or material facts, but in others, perhaps equally material, I do not. I agree with him that there is no neutral axis in a beam or girder, although there is a neutral point, but disagree as to the curve of equilibrium for an arch uniformly loaded. It has been demonstrated by writers on the strength




of materials that when a beam is uniformly loaded, which has a straight line for its lower side, and equal thickness throughout its length, its upper side should form a semi-eliptical curve which agrees so nearly with the curve, the result of his own theorizing, that I think he has little cause to complain of older theorists than himself on that question. If a rectangular form of girder is adopted, which is the one best suited to the art of construction, the greatest strength, and perhaps the greatest stiffness, with a given amount of material, may be obtained by decreasing the cross section of the top and bottom flanges from the center of the length of the girder to its ends, and by increasing the thickness of the vertical web, from the center to the ends—the web being thin at the center, and the flanges thin at the ends.

There are neutral points (to horizontal strain) along the entire length of a beam, if each vertical section is compared with itself alone, but this will not do, inasmuch as the beam or girder must be considered as a whole, and the transfer of strains from one point to another, and when this is done there is but one neutral point in a beam, and that is its center. There must be some resisting force or forces, or fulcrum, between the two, tensive and compressive, forces in the lower and upper halves of a girder, to bring these forces into action. This I believe to be the cohesive force of the particles along the entire line of the girder.

The intensity of the vertical and horizontal forces which operate in a beam or girder uniformly loaded, may be represented by the lines in Fig. 1, but the direction or resultants of these forces I believe to be more truly represented by the lines in Figs. 2 and 3. In Fig. 1, the horizontal lines above and below *c* represent the intensity of the horizontal compressive and tensive forces at points along the line. *a b c*, being the neutral point, and the vertical lines to the right and left of *c* represent the intensity of the vertical forces along the line, *e f c*, being the neutral point. If the forces that act horizontally along the line, *a b*, and are represented in intensity by the horizontal lines in Fig. 1, continue to act horizontally throughout the length of the girder, or from *a* to *g*, and from *a* to *i*, from *b* to *h* and from *b* to *j*, the tendency would be for the particles of the girder to separate or move along the lines, *c g*, *c i*, *c h*, and *c j*. This I conceive not to be the tendency or result of the forces, and believe that the oblique straight lines in Fig. 2, or oblique curved lines in Fig. 3 to represent more nearly the resultants of the vertical and horizontal forces acting in the beam. The intensities of the strains along the upper and lower lines of the beam are represented by the length of the bases of the small triangles, being greatest in the middle, and least at the ends of the beam. It would be a result, and one to be looked for from the lines drawn in Figs. 2 and 3 that a rectangular beam would deflect less with a load placed in the middle or uniformly distributed over it than a beam with less depth near the ends, which is a fact. Whatever the amount of horizontal forces, compressive and extensive, exerted on the lines, *a′ b′* or *a″ b*,″ must be met and resisted by the cohesion of the particles along the lines, *e′ f′* or *e″ f″*, Figs. 2 and 3, produce equilibrium. I conceive that the particles near the top and bottom of a girder, when deflection is produced by a weight, tend to move on or over the particles or fibers next to them, and nearer the center line of the girder—that the cohesion among the fibers resist this movement, and the force exerted on the particles farthest from the center line, are transferred from one another to the center line.

Dayton, Ohio, January, 1858.

D. H. MORRISON.

[Concluded next week.]

### Chimneys for Lamps.

V. L. Vodez, of London, has obtained a patent for placing a disk of fine iron-wire gauze on the upper part of a chimney or glass of a lamp. The edge of this disk of gauze is raised at its edge so as to sit on the chimney, and it is capable of being put on and taken off freely. It is stated that this improvement tends to prevent the lamp from smoking, and at the same time improve the brightness of the flame.

### Ipecacuanha a Cure for Delirium Tremens.

Dr. Gerhard Poali, physician to the Bridewell City Prison, of Chicago, Ill., recently read a paper before the Medical Society of that city, in which he stated that he had under his treatment last year 130 cases of delirium tremens, eight of which proved fatal, and this year up to the date of his lecture, 100, of which four proved fatal. He states that he had tried ipecacuanha in sixty cases with remarkable success; it quieted the nervous system, created an appetite, and uniformly produced sleep. When the case was not of too long standing he gave it as an emetic the first dose, and afterwards gave from fifteen to eighteen grains every other hour, using in the meantime shower baths, and giving the patients strong beef tea.

### New Kind of Cider.

At the late meeting of the United States Agricultural Society, held at Washington, D. C., Mr. A. Jenks, a Virginia farmer, produced a number of bottles of good cider, made from the juice of the sorgho, or Chinese sugar-cane. Mr. Jenks' process is very simple. He treats the juice to bring the feculent matters to the top, whence he removes them by skimming. He then barrels or bottles the liquor, and lets it stand. In about eight days it has become cider, and when fermentation has advanced to the right stage, he bottles it and preserves it as champagne.

CHAPPED HANDS —A good recipe is almond oil or sweet oil, 3 ounces, spermaceti, 4 ounces, pulverised camphor, 1 ounce; dissolve in an earthern vessel by the aid of heat, and stir while it is cooling. Apply night and morning.

MECHANICS

INVENTORS, MILLWRIGHTS. FARMERS, AND MANUFACTURERS.

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